REPORT OF
AIR POLLUTION SOURCE TESTING
OF AN ETHYLENE OXIDE EMISSION-CONTROL SYSTEM
OPERATED BY STERIGENICS, US, LLC.
IN ONTARIO, CALIFORNIA
ON NOVEMBER 17, 2017

Submitted to:

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 East Copley Drive
Diamond Bar, California 91765-4182

Submitted by:

STERIGENICS US, LLC.
687 South Wanamaker Avenue
Ontario, California 91761

SCAQMD Facility ID 126060

Prepared by:

ECSI, INC.
PO Box 1498
San Clemente, California 92674

December 28, 2017

ECSi

CONTACT SUMMARY

CLIENT

Ms. Laura Hartman
EHS Manager
STERIGENICS US. LLC.
2015 Spring Road, Suite 650
Oak Brook, Illinois 60523

Phone: (630)928-1724
FAX: (630)928-1701
email: LHartman@sterigenics.com

FACILITY

Mr. Michael Kolesar
General Manager
STERIGENICS US, LLC.
687 South Wanamaker Avenue
Ontario, California 91761

Phone: (909)390-2113
FAX: (909)390-2124
email: MKolesar@sterigenics.com

SCAQMD Permit Numbers G47352 (Donaldson Abator) and A/N 580002 (PCS Oxidizer)

TEST DATE

November 17, 2017

REGULATORY AGENCY

Mr. David Liu
Air Quality Engineer
SCAQMD
21865 East Copley Drive
Diamond Bar, California 91765-4182

Phone: (909)396-2438
FAX: (909)396-3341
email: DLiu@aqmd.gov

TESTING CONTRACTOR

Daniel P. Kremer
President
ECSi, Inc.
PO Box 1498
San Clemente, California 92674-1498

Phone: (949)400-9145
FAX: (949)281-2169
email: dankremer@ecsi1.com

TABLE OF CONTENTS

ECSi

LIST OF TABLES

ECSi

LIST OF APPENDICES

ECSi

1.0 INTRODUCTION

On Friday, November 17, 2017, ECSi, Inc. performed annual air pollution source testing and semi-annual leak testing of an ethylene oxide (EtO) sterilization and emission-control system operated by Sterigenics US, LLC. in Ontario, California. The control devices tested included one Donaldson Abator catalytic oxidizer (G47352), and one Pollution Systems recuperative catalytic oxidizer (A/N 580002), which are currently used to control emissions from eight commercial ethylene oxide sterilizer backvents, and two aeration rooms. The purpose of the testing program was to evaluate initial and continued compliance with South Coast Air Quality Management District (SCAQMD) Rule 1405, the conditions established in the permits granted to Sterigenics by the SCAQMD, and with the provisions in 40 CFR, Part 63.363.

2.0 EQUIPMENT

The EtO gas-sterilization system is comprised of eight commercial sterilizers, all discharging through liquid-ring vacuum pumps to an existing packed-tower acid scrubber emission control device. The sterilization chamber backvents and aeration rooms discharge to a common duct that exhausts to the existing Donaldson EtO Abator catalytic oxidizer and the new Pollution Systems recuperative catalytic oxidizer. These oxidizers maintain a constant flow and a minimum operating temperature in order to preserve destruction efficiency in either simultaneous and parallel operation or independent operation. The gas-sterilization and emission-control equipment consists of the following:

- Six identical Trumbo/Xytel Gas Sterilizers, each comprised of a heated 2460 cubic foot interior volume sterilization chamber, a recirculating vacuum pump chamber evacuation system, a backdraft valve.

- Two identical Trumbo/Xytel Gas Sterilizers, each comprised of a heated 5900 cubic foot interior volume sterilization chamber, a recirculating vacuum pump chamber evacuation system, a backdraft valve, and a fugitive emissions exhaust hood.

- Two heated aeration rooms.

Sterilizer vacuum pump emissions are controlled by:

- One Ceilcote packed tower chemical scrubber, Model SPT-48-168, 4'-0" diameter and 23'-4" high, equipped with a 14' deep bed of No. 1 Tellerette packing, a 5000 gallon reaction tank with two 10 hp/ 151 gpm recirculating pumps (one standby), and a 3 hp/2000 cfm exhaust fan.

Sterilizer backvent and aeration emissions are controlled by:

- One Donaldson EtO Abator System, 25,000 SCFM, equipped with a prefilter, a natural gas fired heater, an exhaust gas heat exchanger, a reactive catalyst bed, and an exhaust blower.

- One Pollution Systems recuperative catalytic oxidizer, Model RCO22, 20,000 SCFM, equipped with a prefilter, a natural gas fired heater, an exhaust gas heat exchanger, a reactive catalyst bed, and an exhaust blower.

ECSi

3.0 TESTING

EtO source testing was conducted in accordance with the procedures outlined in CARB Method 431 and USEPA CFR40, Part 63.365. EtO emissions monitoring was conducted simultaneously at the inlet and outlet of the Abator during the entire backvent duration of one of the eight sterilizers, and during three one-hour time intervals of the aeration process.

During backvent/aeration testing, EtO emissions at the inlet and the outlet of each catalytic oxidizer were determined using direct source sample injection into the gas chromatograph (GC). All backvent and aeration testing was performed using freshly sterilized product, under normal operating conditions. The catalytic oxidizers were tested during simultaneous and parallel operation.

4.0 RULE/COMPLIANCE REQUIREMENTS

The EtO gas-sterilization system at Sterigenics US, LLC. was tested to evaluate compliance with the conditions specified in the SCAQMD Permit, and with the requirements outlined in SCAQMD Rule 1405. The current testing was performed to demonstrate initial and continued compliance for the Donaldson and Pollution Systems oxidizers with the following requirements:

- The backvent valve discharge stream must be vented to control equipment with an EtO emission-reduction efficiency of at least 99.0% by weight;

- The aeration discharge stream must be vented to control equipment with an EtO emission-reduction efficiency of at least 99.0% by weight;

Testing is required to demonstrate compliance with these requirements. Source testing of each emission-control device is required initially, and is required annually thereafter.

5.0 TEST METHOD REFERENCE

5.1 INTRODUCTION

EtO source testing was conducted in accordance with the procedures outlined in CARB Method 431 and USEPA CFR40, Part 63.365. EtO emissions monitoring was conducted simultaneously at the inlet and outlet of the Abator during the entire backvent duration of one of the eight sterilizers, and during three one-hour time intervals of the aeration process.

During backvent/aeration testing, EtO emissions at the inlet and the outlet of each catalytic oxidizer were determined using direct source sample injection into the gas chromatograph (GC). All backvent and aeration testing was performed using freshly sterilized product, under normal operating conditions. The catalytic oxidizers were tested during simultaneous and parallel operation.

Operation and documentation of process conditions were performed by personnel from Sterigenics, Inc. using existing monitoring instruments installed by the manufacturer of the equipment to be tested. In accordance with SCAQMD requirements, and the procedures established in USEPA CFR40, Part 63, Subpart O, catalyst bed operating temperature was recorded, and is presented in Tables 1, 2, 3 and 4.

5.2 VOLUMETRIC FLOW MEASUREMENT

Exhaust gas flow at the outlet of the Abator was determined by EPA Method 2C using a standard pitot tube and an inclined-oil manometer. Sampling ports were installed in accordance with EPA Method 1, and are located far enough from any flow disturbances to permit accurate flow measurement.

Temperature measurements were obtained from a type K thermocouple and thermometer attached to the sampling probe. Exhaust gas composition was assumed to be air and small amounts of water vapor. Water vapor was negligible, at about 3 percent.

5.3 CONTROL EFFICIENCY AND MASS EMISSIONS MEASUREMENT

During backvent and aeration testing, EtO emissions at the inlet and outlet of each catalytic oxidizer were determined using direct source sample injection into the GC. The mass of EtO emitted to the inlet and from the outlet were determined using the equation shown below in Section 5.9. Mass-mass control-efficiency of EtO during the backvent and aeration phases was calculated by comparing the mass of EtO vented to the system inlet to the mass of EtO vented from the system outlet.

During the backvent and aeration phases, vented gas was analyzed by an SRI, Model 8610, portable gas chromatograph (GC), equipped with the following: dual, heated sample loops and injectors; dual columns; and dual detectors. A flame ionization detector (FID) was used to quantify inlet EtO emissions, and a photoionization detector (PID) was used to quantify low-level EtO emissions at the emission-control device outlet.

5.4 SAMPLE TRANSPORT

Source gas was pumped to the GC at approximately 500-1000 cubic centimeters per minute (cc/min) from the sampling ports through two lengths of Teflon® sample line, each with a nominal volume of approximately 75 cubic centimeters (cc) and an outer diameter of 0.25 inch. At the inlet of each catalytic oxidizer, the sampling port was located in the common backvent/aeration discharge duct, upstream of the oxidizer. At the outlet of each catalytic oxidizer, sampling ports were located in the exhaust stack downstream of the catalyst bed.

5.5 GC INJECTION

Source-gas samples were injected into the GC which was equipped with two heated sampling loops, each containing a volume of approximately 2cc and maintained at 100 degrees Celsius (C). Injections occurred at approximately one-minute intervals during backvent testing, and at approximately five-minute intervals during aeration testing. Helium was the carrier gas for both the FID and PID.

5.6 GC CONDITIONS

The packed columns for the GC were operated at 90 degrees C. The columns were stainless steel, 6 feet long, 0.125 inch outer diameter, packed with 1 percent SP-1000 on 60/80 mesh Carbopack B.

During the analysis, the FID was operated at 250 degrees C. The support gases for the FID were hydrogen (99.995% pure) and air (99.9999% pure). Any unused sample gas was vented from the GC system back to the inlet of the control device being tested.

5.7 CALIBRATION STANDARDS

The FID was calibrated for mid-range part-per-million-by-volume (ppmv) level analysis using gas proportions similar to the following:

1) 100 ppmv EtO, balance nitrogen
2) 50 ppmv EtO, balance nitrogen (audit gas)
3) 10 ppmv EtO, balance nitrogen
4) 1 ppmv EtO, balance nitrogen

The PID was calibrated for low-range ppmv level analysis using gas proportions similar to the following:

1) 100 ppmv EtO, balance nitrogen
2) 50 ppmv EtO, balance nitrogen (audit gas)
3) 10 ppmv EtO, balance nitrogen
4) 1 ppmv EtO, balance nitrogen

Each of these calibration standards was in a separate, certified manufacturer's cylinder. Copies of the calibration gas laboratory certificates are attached as Appendix E.

5.8 SAMPLING DURATION

Sampling was performed during the entire backvent duration of one of the eight sterilizers, and during three one hour time intervals of the aeration process. The catalytic oxidizers were tested during simultaneous and parallel operation.

Backvent testing was performed with freshly sterilized product in the sterilization chamber, upon initial opening of the backvent valve at the conclusion of the sterilizer vacuum vent phase. All aeration testing was performed with freshly sterilized product in the aeration rooms.

5.9 CONTROL-EFFICIENCY/MASS-EMISSIONS CALCULATIONS

Mass emissions of EtO during the backvent and aeration phases were calculated using the following equation:

$$MassRate = (VolFlow)(MolWt)(ppmv\ EtO/10^6)/(MolVol)$$

Where:

MassRate	=	EtO mass flow rate, pounds per minute
VolFlow	=	Corrected volumetric flow rate, standard cubic feet per minute at 68 degrees F
MolWt	=	44.05 pounds EtO per pound mole
ppmv EtO	=	EtO concentration, parts per million by volume
10^6	=	Conversion factor, ppmv per "cubic foot per cubic foot"
MolVol	=	385.32 cubic feet per pound mole at one atmosphere and 68 degrees F

Mass-mass control efficiency of EtO was calculated for the backvent/aeration. Results of the control-efficiency testing are presented in Section 8.0 and Tables 1 and 2.

5.11 LEAK TESTING

Testing for EtO leaks was conducted by CARB Method 21 in accordance with SCAQMD Rule 1405. Testing was conducted during the exposure and chamber evacuation phases of the sterilization and exhaust cycles of the sterilizer. These conditions represent maximum sterilant gas mass flow through the system.

EtO leak testing was performed using a Bacharach EO Leakator, Part Number 19-7057, Gas Leak Detector, equipped with a metal-oxide semi-conductor sensor, an audible signal, and a visual display. The lower detection limit of the instrument is less than the leak definition specified for EtO in SCAQMD Rule 1405. This leak definition is 10 ppm EtO for sterilant gas composed of 100 percent EtO.

EtO concentration was measured one centimeter from the surface of all accessible components of the sterilizer and emission-control device that are potential sources of EtO leakage. Each component found to be leaking was identified and tagged. The date and the results of the EtO measurement for each leaking component were entered on that component's tag. The leak test data is summarized in Section 8.0 and in Table 3.

6.0 TEST SCENARIO

Each emission-control device was tested under normal operating conditions, with both oxidizers in simultaneous/parallel operation. Each test consisted of one 15-minute backvent phase and three one-hour intervals of the 24-hour/day aeration process, with freshly sterilized product in aeration.

7.0 QA/QC

7.1 FIELD TESTING QUALITY ASSURANCE

At the beginning of the test, the sampling system was leak checked at a vacuum of 15 inches of mercury. The sampling system was considered leak free when the flow indicated by the rotameters fell to zero.

At the beginning of the test, a system blank was analyzed to ensure that the sampling system was free of EtO. Ambient air was introduced at the end of the heated sampling line and drawn through the sampling system line to the GC for analysis. The resulting chromatogram also provided a background level for non-EtO components (i.e. ambient air, carbon dioxide, water vapor) which are present in the source gas stream due to the ambient dilution air which is drawn into the emission-control device, and due to the destruction of EtO by the emission-control device which produces carbon dioxide and water vapor. This chromatogram, designated AMB, is included with the calibration data in Appendix A.

7.2 CALIBRATION PROCEDURES

The GC system was calibrated at the beginning and conclusion of each day's testing. Using the Peaksimple II analytical software, a point-to-point calibration curve was constructed for each detector. A gas cylinder of similar composition as the calibration gases, but certified by a separate supplier, was used to verify calibration gas composition and GC performance.

All calibration gases and support gases used were of the highest purity and quality available. A copy of the laboratory certification for each calibration gas is attached as Appendix E.

8.0 TEST RESULTS

The Donaldson EtO Abator (Oxidizer #1) demonstrated an EtO control efficiency of 99.93 percent for the control of backvent emissions, and 99.94 percent for the control of aeration emissions. The Pollution Systems Oxidizer (Oxidizer #2) demonstrated an EtO control efficiency of 99.94 percent for the control of backvent emissions, and 99.92 percent for the control of aeration emissions. SCAQMD Rule 1405 specifies that EtO emission-control devices, at gas sterilization facilities with EtO usage in the range of Sterigenics US, LLC., must have an EtO control efficiency of 99.0 percent or more during the aeration and backvent phases. Both emission-control devices met this requirement.

The entire gas sterilization and emission control system was also found to be leak free.

The test results are summarized in Table 1, 2, 3, 4 and 5. Chromatograms and chromatographic supporting data are attached as Appendices A through C. Copies of field data and calculation worksheets are attached as Appendix D.

TABLES

TABLE 1
ETHYLENE OXIDE CONTROL EFFICIENCY - BACKVENT
OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE (OXIDIZER #1)
OPERATED BY STERIGENICS, INC.
IN ONTARIO, CALIFORNIA
ON NOVEMBER 17, 2017

CYCLE PHASE	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
Backvent(3)	940	15.8	0.01	99.9367
Backvent	942	15.9	0.01	99.9371
Backvent	943	14.4	0.01	99.9306
Backvent	944	13.6	0.01	99.9265
Backvent	945	13.7	0.01	99.9270
Backvent	946	15.9	0.01	99.9371
Backvent	948	16.7	0.01	99.9401
Backvent	949	15.4	0.01	99.9351
Backvent	950	15.2	0.01	99.9342
Backvent	951	15.5	0.01	99.9355
Backvent	953	15.6	0.01	99.9359
Backvent	954	14.8	0.01	99.9324
TIME-WEIGHTED AVERAGE:		**15.21**	**0.0100**	**99.9340**
		SCAQMD REQUIRED CONTROL EFFICIENCY:		**99.0**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.01 ppm is the quantification limit for the detector used at the outlet.
(3) - The backvent phase test run started at 09:40, ended at 09:55.
(4) - The average catalyst bed temperature recorded during the test run was 293 degrees F.

TABLE 2
ETHYLENE OXIDE CONTROL EFFICIENCY - BACKVENT
OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE (OXIDIZER #2)
OPERATED BY STERIGENICS, INC.
IN ONTARIO, CALIFORNIA
ON NOVEMBER 17, 2017

CYCLE PHASE	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
Backvent(3)	1006	174	0.01	99.9943
Backvent	1007	20.0	0.01	99.9500
Backvent	1008	17.3	0.01	99.9422
Backvent	1009	15.4	0.01	99.9351
Backvent	1010	15.1	0.01	99.9338
Backvent	1012	14.3	0.01	99.9301
Backvent	1013	14.3	0.01	99.9301
Backvent	1014	15.3	0.01	99.9346
Backvent	1015	16.8	0.01	99.9405
Backvent	1016	15.5	0.01	99.9355
Backvent	1018	15.9	0.01	99.9371
Backvent	1019	14.6	0.01	99.9315
TIME-WEIGHTED AVERAGE:		**29.04**	**0.0100**	**99.9412**
		SCAQMD REQUIRED CONTROL EFFICIENCY:		**99.0**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.01 ppm is the quantification limit for the detector used at the outlet.
(3) - The backvent phase test run started at 10:05, ended at 10:20.
(4) - The average catalyst bed temperature recorded during the test run was 302 degrees F.

TABLE 3
ETHYLENE OXIDE CONTROL EFFICIENCY - AERATION
OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE - OXIDIZER #1
OPERATED BY STERIGENICS, INC.
IN ONTARIO, CALIFORNIA
ON NOVEMBER 17, 2017

RUN NUMBER	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
1(3)	1030	18.7	0.01	99.9465
1	1035	17.9	0.01	99.9441
1	1040	17.3	0.01	99.9422
1	1045	16.5	0.01	99.9394
1	1050	19.0	0.01	99.9474
1	1055	17.3	0.01	99.9422
1	1100	18.4	0.01	99.9457
1	1105	17.5	0.01	99.9429
1	1110	17.7	0.01	99.9435
1	1115	15.7	0.01	99.9363
1	1120	16.5	0.01	99.9394
1	1125	17.9	0.01	99.9441
2(4)	1130	17.3	0.01	99.9422
2	1135	16.9	0.01	99.9408
2	1140	17.2	0.01	99.9419
2	1145	14.8	0.01	99.9324
2	1150	16.4	0.01	99.9390
2	1155	15.6	0.01	99.9359
2	1200	15.6	0.01	99.9359
2	1205	16.2	0.01	99.9383
2	1210	15.1	0.01	99.9338
2	1215	14.0	0.01	99.9286
2	1220	13.9	0.01	99.9281
2	1225	15.7	0.01	99.9363
3(5)	1230	14.5	0.01	99.9310
3	1235	14.4	0.01	99.9306
3	1240	14.8	0.01	99.9324
3	1245	15.2	0.01	99.9342
3	1250	14.8	0.01	99.9324
3	1255	15.7	0.01	99.9363
3	1300	15.8	0.01	99.9367
3	1305	14.4	0.01	99.9306
3	1310	14.2	0.01	99.9296
3	1315	13.7	0.01	99.9270
3	1320	13.7	0.01	99.9270
3	1325	14.2	0.01	99.9296
TIME-WEIGHTED AVERAGE:		**15.96**	**0.0100**	**99.9368**
		SCAQMD REQUIRED CONTROL EFFICIENCY:		**99.0%**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.01 ppm is the quantification limit for the detector used at the outlet.
(3) - Aeration Phase Test Run #1 started at 10:28, ended at 11:28.
(4) - Aeration Phase Test Run #2 started at 11:28, ended at 12:28.
(5) - Aeration Phase Test Run #3 started at 12:28, ended at 13:28.
(4) - The average catalyst bed temperature recorded during the test was 293 degrees F.

ECSi

TABLE 4
ETHYLENE OXIDE CONTROL EFFICIENCY - AERATION
OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE - OXIDIZER #2
OPERATED BY STERIGENICS, INC.
IN ONTARIO, CALIFORNIA
ON NOVEMBER 17, 2017

RUN NUMBER	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
1(3)	1032	16.4	0.01	99.9390
1	1037	15.2	0.01	99.9342
1	1042	16.3	0.01	99.9387
1	1047	15.7	0.01	99.9363
1	1052	16.6	0.01	99.9398
1	1057	16.9	0.01	99.9408
1	1102	14.2	0.01	99.9296
1	1107	13.7	0.01	99.9270
1	1112	12.8	0.01	99.9219
1	1117	12.8	0.01	99.9219
1	1122	12.7	0.01	99.9213
1	1127	14.2	0.01	99.9296
2(4)	1132	13.7	0.01	99.9270
2	1137	16.8	0.01	99.9405
2	1142	12.9	0.01	99.9225
2	1147	13.5	0.01	99.9259
2	1152	12.6	0.01	99.9206
2	1157	14.0	0.01	99.9286
2	1202	13.8	0.01	99.9275
2	1207	13.3	0.01	99.9248
2	1212	11.7	0.01	99.9145
2	1217	11.6	0.01	99.9138
2	1222	12.3	0.01	99.9187
2	1227	13.5	0.01	99.9259
3(5)	1232	11.2	0.01	99.9107
3	1237	11.7	0.01	99.9145
3	1242	11.7	0.01	99.9145
3	1247	12.1	0.01	99.9174
3	1252	13.0	0.01	99.9231
3	1257	13.7	0.01	99.9270
3	1302	12.0	0.01	99.9167
3	1307	11.6	0.01	99.9138
3	1312	11.8	0.01	99.9153
3	1317	12.2	0.01	99.9180
3	1322	11.0	0.01	99.9091
3	1327	12.6	0.01	99.9206
TIME-WEIGHTED AVERAGE:		**13.38**	**0.0100**	**99.9242**
		SCAQMD REQUIRED CONTROL EFFICIENCY:		**99.0%**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.01 ppm is the quantification limit for the detector used at the outlet.
(3) - Aeration Phase Test Run #1 started at 10:30, ended at 11:30.
(4) - Aeration Phase Test Run #2 started at 11:30, ended at 12:30.
(5) - Aeration Phase Test Run #3 started at 12:30, ended at 13:30.
(4) - The average catalyst bed temperature recorded during the test was 302 degrees F.

ECSi

TABLE 5
ETHYLENE OXIDE LEAK TESTING
OF A GAS STERILIZATION SYSTEM (8 STERILIZERS)
OPERATED BY STERIGENICS, INC.
IN ONTARIO, CALIFORNIA
ON NOVEMBER 17, 2017

COMPONENT GROUP TESTED	LEAKING COMPONENTS FOUND	CONCENTRATION
Supply Tanks / Load Stations	None	<1.0 ppm (1)
Sterilizer Inlets / Inbleed Valves	None	<1.0 ppm
Door Seals	None	<1.0 ppm
Sterilizer Outlets / Chamber Drains	None	<1.0 ppm
Vacuum Pumps	None	<1.0 ppm
Emission Control Device Inlet	None	<1.0 ppm

Notes:
(1) - PPM = parts per million by volume

APPENDICES

APPENDIX A

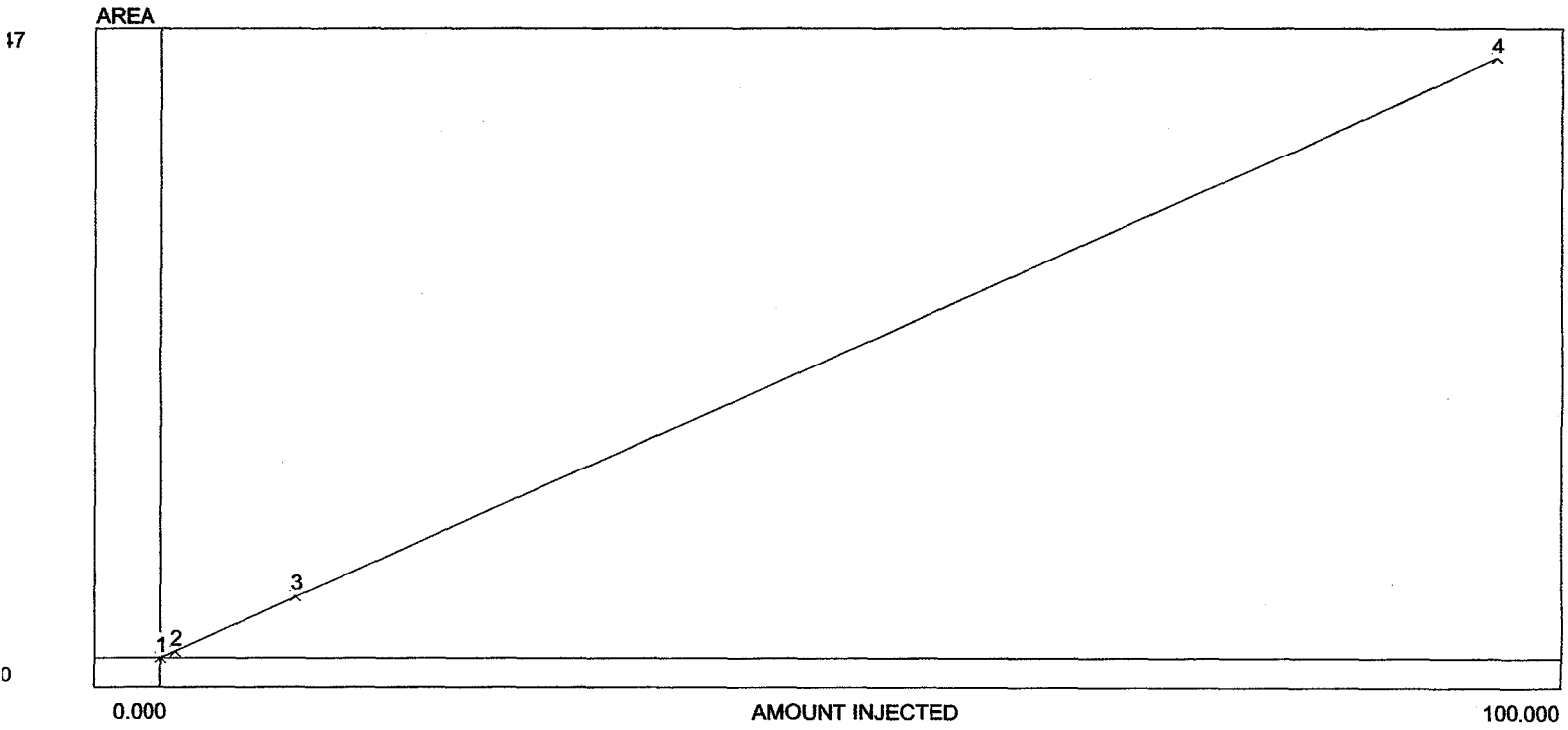
Calibration Data

ECSi

Component file: [illegible]

Peak	Name	Start	End	Calibration	Int.Std	Units
1	Dead Vol / Air	0.000	0.300		0.000	
2	Ambient H2O	0.300	0.450		0.000	
3	Ethylene Oxide	0.450	0.550	C:\peak359\1Ster	0.000	17.ppm
4	Acetaldehyde	0.550	0.800		0.000	
5	CO2	0.800	1.000		0.000	

Calibration file: C:\peak359\1SterOnt2017.cal



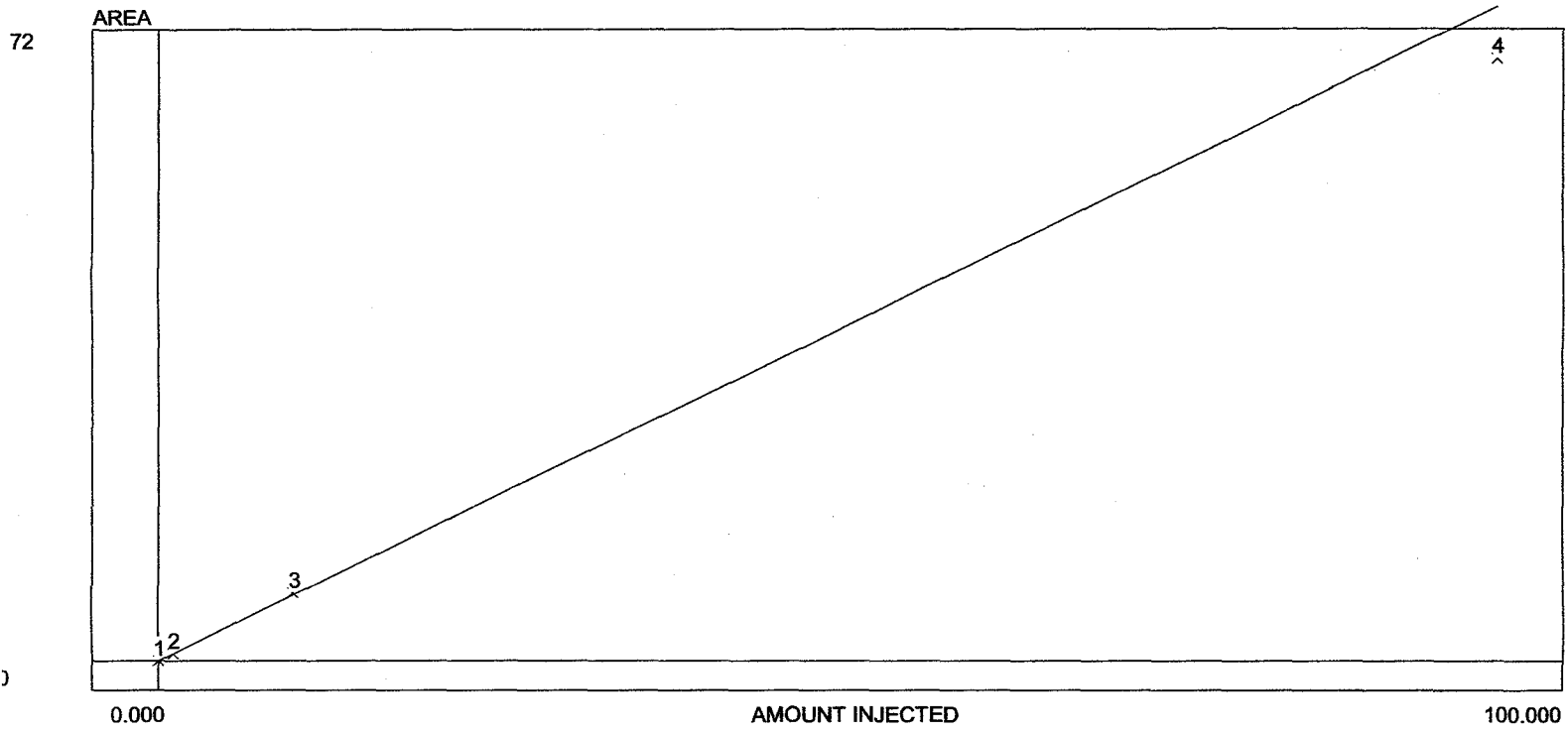
Avg slope of curve: 0.47
Y-axis intercept: 0.00
Linearity: 1.00
Number of levels: 4
SD/rel SD of CF's: 0.2/66.7
Y=0.4669X
r2: 1.0000
Last calibrated: Fri Nov 17 09:32:24 2017

Lvl.	Area/ht.	Amount	CF	Current	Previous #1	Previous #2
1	0.000	0.000	0.000	0.000	N/A	N/A
2	0.502	1.100	0.456	0.502	N/A	N/A
3	4.820	10.100	0.477	4.820	N/A	N/A
4	46.700	100.000	0.467	46.700	N/A	N/A

omponent file: [illegible]

Peak	Name	Start	End	Calibration	Int.Std	Units
1	Dead Vol / Air	0.000	0.300		0.000	
2	Ambient H2O	0.300	0.470		0.000	
3	Ethylene Oxide	0.470	0.570	C:\peak359\2Ster	0.00017.ppm	
4	Acetaldehyde	0.570	0.800		0.000	
5	CO2	0.800	1.000		0.000	

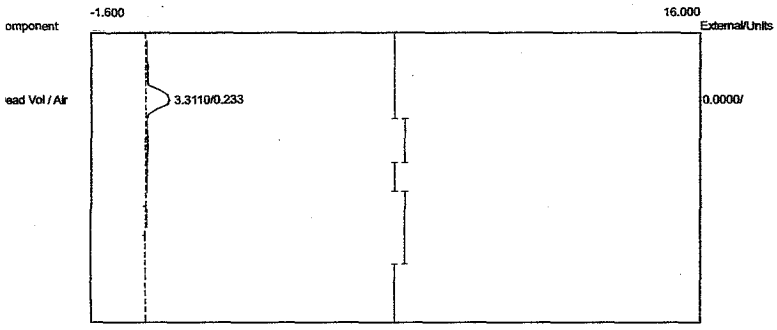
:alibration file: C:\peak359\2SterOnt2017.cal



Avg slope of curve: 1.87
Y-axis intercept: 0.00
Linearity: 1.00
Number of levels: 4
SD/rel SD of CF's: 0.9/67.1
Y=1.8714X
r2: 0.9999
Last calibrated: Fri Nov 17 09:31:38 2017

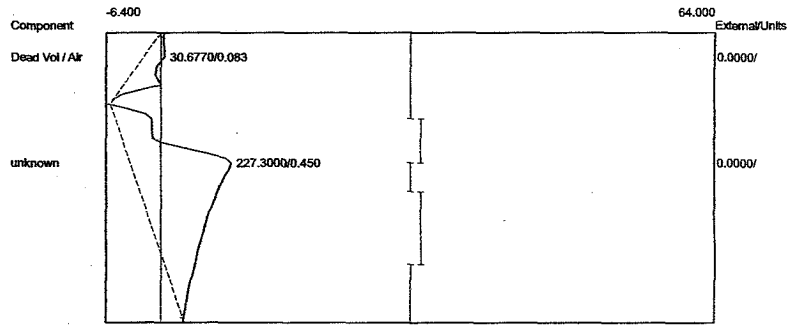
Lvl.	Area/ht.	Amount	CF	Current	Previous #1	Previous #2
1	0.000	0.000	0.000	0.000	N/A	N/A
2	2.160	1.100	1.964	2.160	N/A	N/A
3	19.500	10.100	1.931	19.500	N/A	N/A
4	172.000	100.000	1.720	172.000	N/A	N/A

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:03:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-Amb.CHR (c:\peak359)
Sample: Ambient Background
Operator: D. Kremer



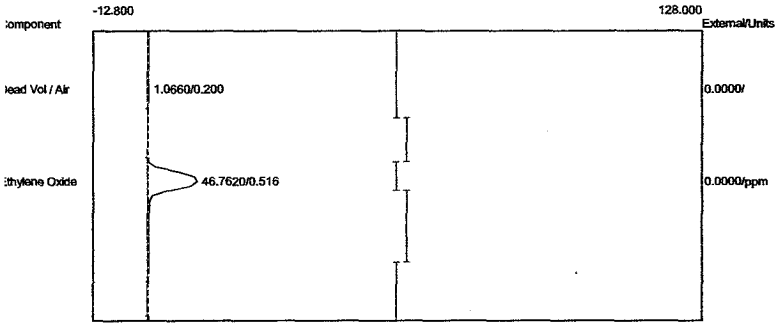
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	3.3110	0.0000	
		3.3110	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:03:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-Amb.CHR (c:\peak359)
Sample: Ambient Background
Operator: D. Kremer



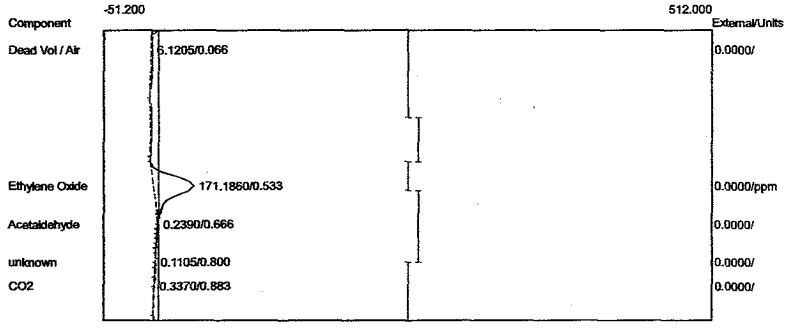
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	30.6770	0.0000	
		30.6770	0.0000	

Lab name: ECO!
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:07:37
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-C01.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



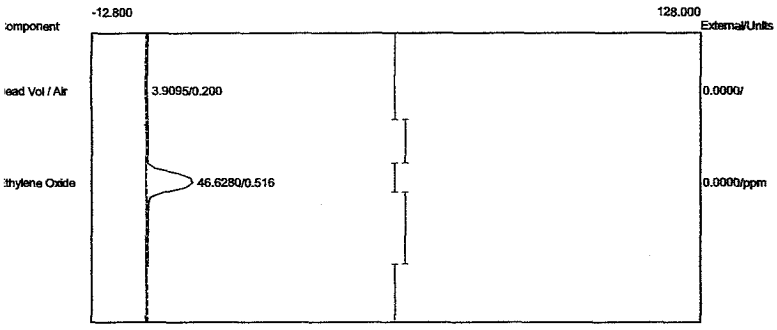
Component	Retention	Area	External	Units
Dead Vol / Air	0.200	1.0660	0.0000	
Ethylene Oxide	0.516	46.7620	0.0000	ppm
		47.8280	0.0000	

Lab name: ECO!
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:07:37
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-C01.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



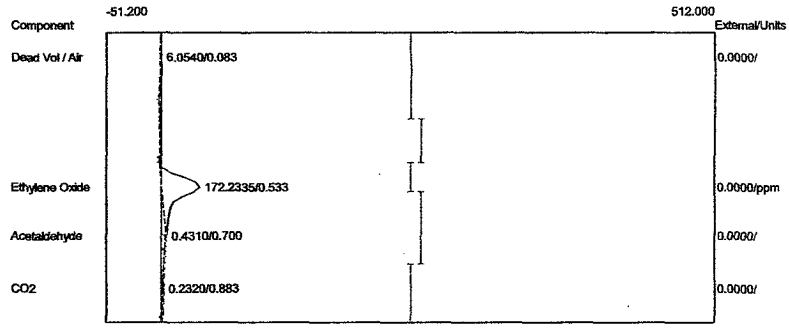
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	6.1205	0.0000	
Ethylene Oxide	0.533	171.1860	0.0000	ppm
Acetaldehyde	0.666	0.2390	0.0000	
CO2	0.883	0.3370	0.0000	
		177.8825	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:09:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-C02.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



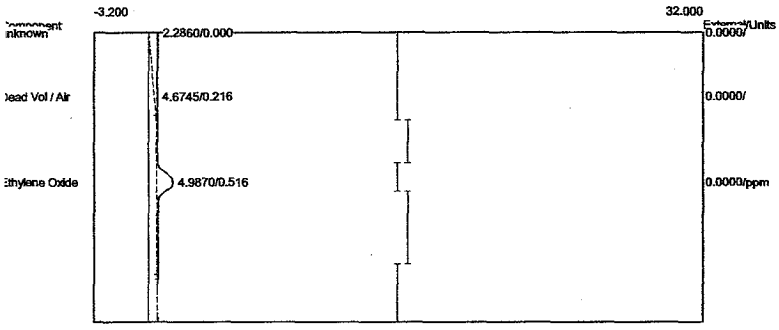
Component	Retention	Area	External	Units
Dead Vol / Air	0.200	3.9095	0.0000	
Ethylene Oxide	0.516	46.6280	0.0000	ppm
		50.5375	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:09:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-C02.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



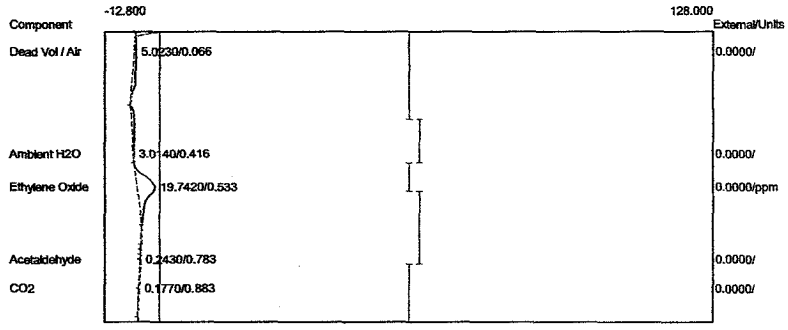
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	6.0540	0.0000	
Ethylene Oxide	0.533	172.2335	0.0000	ppm
Acetaldehyde	0.700	0.4310	0.0000	
CO2	0.883	0.2320	0.0000	
		178.9505	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:13:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-C03.CHR (c:\peak359)
Sample: 10.1 ppm EtO std
Operator: D. Kremer



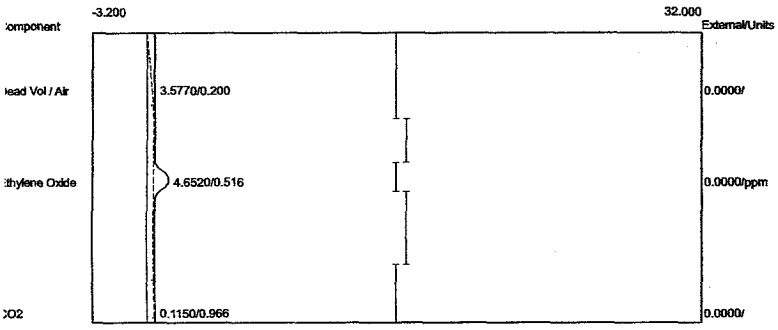
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	4.6745	0.0000	
Ethylene Oxide	0.516	4.9870	0.0000	ppm
		9.6615	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:13:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-C03.CHR (c:\peak359)
Sample: 10.1 ppm EtO std
Operator: D. Kremer



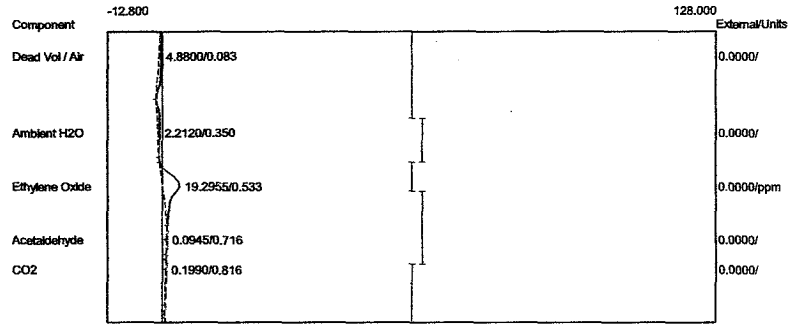
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	5.0230	0.0000	
Ambient H2O	0.416	3.0140	0.0000	
Ethylene Oxide	0.533	19.7420	0.0000	ppm
Acetaldehyde	0.783	0.2430	0.0000	
CO2	0.883	0.1770	0.0000	
		28.1990	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:16:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-C04.CHR (c:\peak359)
Sample: 10.1 ppm EtO std
Operator: D. Kremer



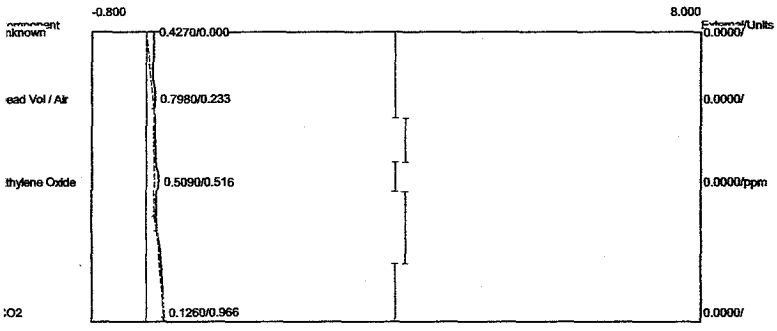
Component	Retention	Area	External	Units
Dead Vol / Air	0.200	3.5770	0.0000	
Ethylene Oxide	0.516	4.6520	0.0000	ppm
CO2	0.966	0.1150	0.0000	
		8.3440	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:16:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-C04.CHR (c:\peak359)
Sample: 10.1 ppm EtO std
Operator: D. Kremer



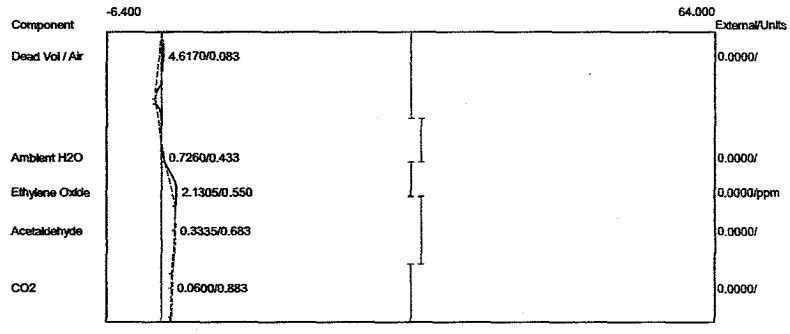
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	4.8800	0.0000	
Ambient H2O	0.350	2.2120	0.0000	
Ethylene Oxide	0.533	19.2955	0.0000	ppm
Acetaldehyde	0.716	0.0945	0.0000	
CO2	0.816	0.1990	0.0000	
		26.6810	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:20:35
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-C05.CHR (c:\peak359)
Sample: 1.10 ppm EtO std
Operator: D. Kremer



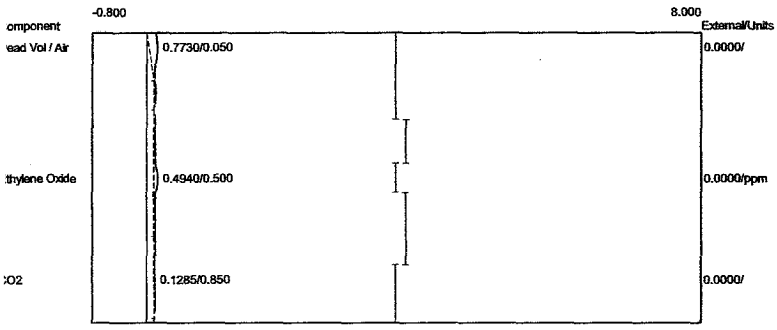
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	0.7980	0.0000	
Ethylene Oxide	0.516	0.5090	0.0000	ppm
CO2	0.966	0.1260	0.0000	
		1.4330	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:20:35
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-C05.CHR (c:\peak359)
Sample: 1.10 ppm EtO std
Operator: D. Kremer



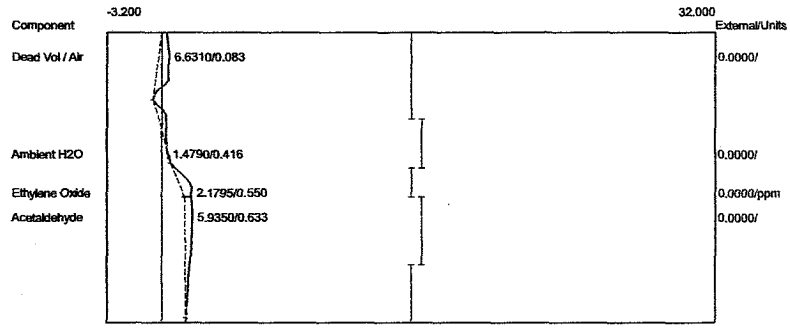
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	4.6170	0.0000	
Ambient H2O	0.433	0.7260	0.0000	
Ethylene Oxide	0.550	2.1305	0.0000	ppm
Acetaldehyde	0.683	0.3335	0.0000	
CO2	0.883	0.0600	0.0000	
		7.8670	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:25:47
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-C06.CHR (c:\peak359)
Sample: 1.10 ppm EtO std
Operator: D. Kremer



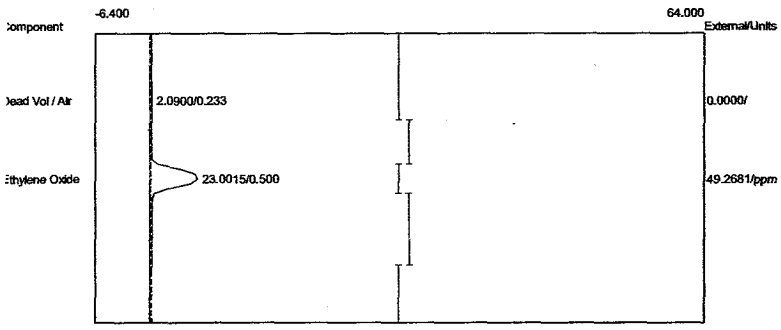
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	0.7730	0.0000	
Ethylene Oxide	0.500	0.4940	0.0000	ppm
CO2	0.850	0.1285	0.0000	
		1.3955	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:25:47
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-C06.CHR (c:\peak359)
Sample: 1.10 ppm EtO std
Operator: D. Kremer



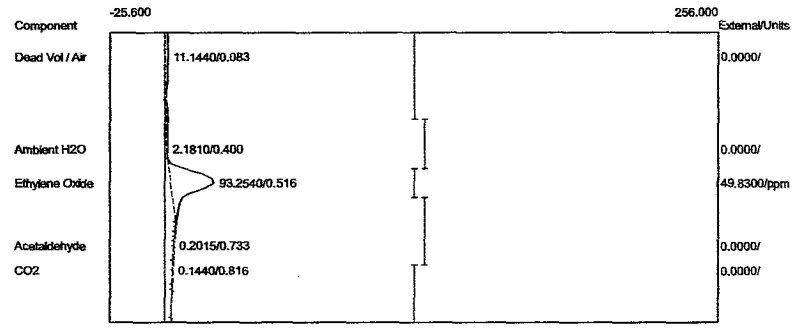
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	6.6310	0.0000	
Ambient H2O	0.416	1.4790	0.0000	
Ethylene Oxide	0.550	2.1795	0.0000	ppm
Acetaldehyde	0.633	5.9350	0.0000	
		16.2245	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:30:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-C07.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



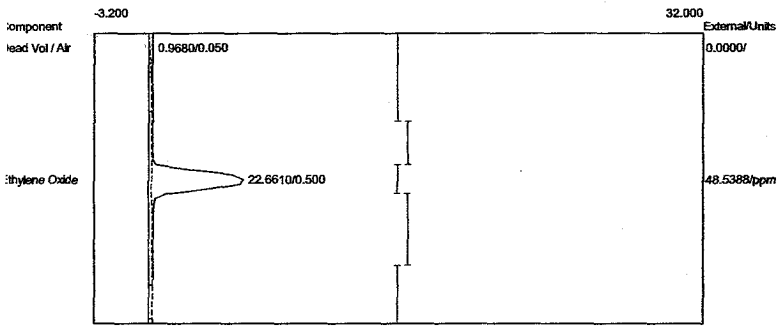
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.0900	0.0000	
Ethylene Oxide	0.500	23.0015	49.2681	ppm
		25.0915	49.2681	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PreCal
Analysis date: 11/17/2017 09:30:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-C07.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



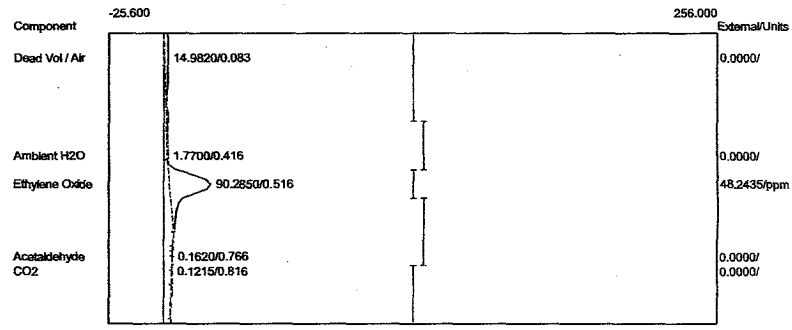
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	11.1440	0.0000	
Ambient H2O	0.400	2.1810	0.0000	
Ethylene Oxide	0.516	93.2540	49.8300	ppm
Acetaldehyde	0.733	0.2015	0.0000	
CO2	0.816	0.1440	0.0000	
		106.9245	49.8300	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PostCal
Analysis date: 11/17/2017 14:41:13
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-C08.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.050	0.9680	0.0000	
Ethylene Oxide	0.500	22.6610	48.5388	ppm
		23.6290	48.5388	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: PostCal
Analysis date: 11/17/2017 14:41:13
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-C08.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer

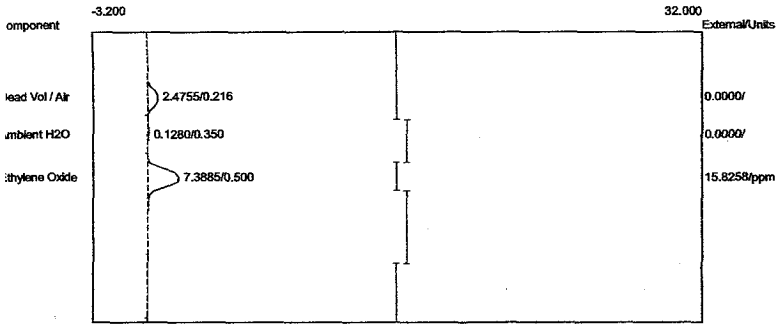


Component	Retention	Area	External	Units
Dead Vol / Air	0.083	14.9820	0.0000	
Ambient H2O	0.416	1.7700	0.0000	
Ethylene Oxide	0.516	90.2850	48.2435	ppm
Acetaldehyde	0.766	0.1620	0.0000	
CO2	0.816	0.1215	0.0000	
		107.3205	48.2435	

APPENDIX B

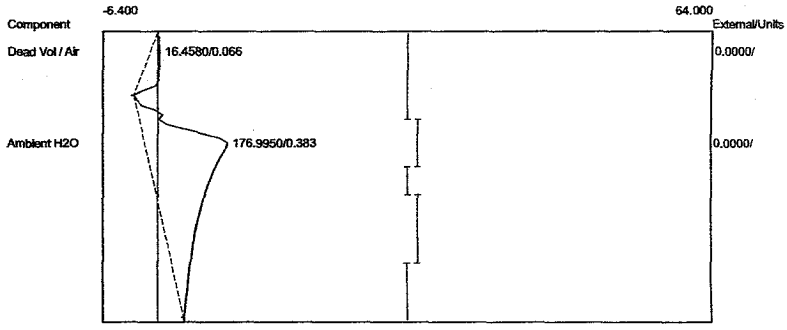
Backvent Chromatograms

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:40:58
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B01.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



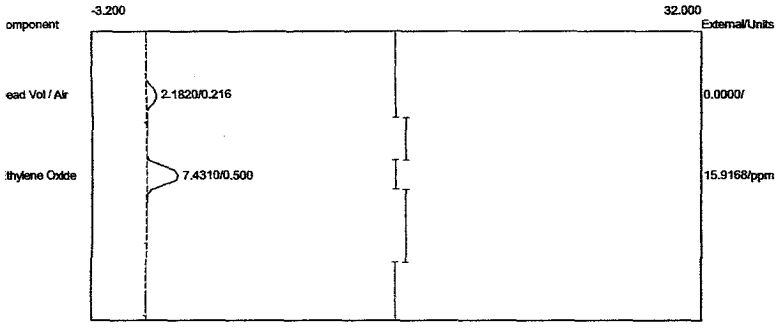
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4755	0.0000	
Ambient H2O	0.350	0.1280	0.0000	
Ethylene Oxide	0.500	7.3885	15.8258	ppm
		9.9920	15.8258	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:40:58
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B01.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



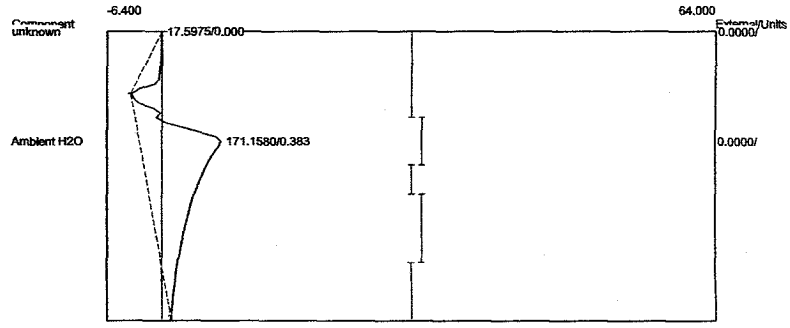
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	16.4580	0.0000	
Ambient H2O	0.383	176.9950	0.0000	
		193.4530	0.0000	

Lab name: EGSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:42:08
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B02.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



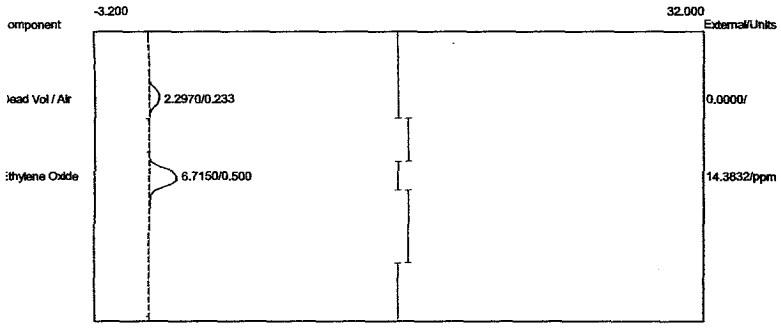
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.1820	0.0000	
Ethylene Oxide	0.500	7.4310	15.9168	ppm
		9.6130	15.9168	

Lab name: EGSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:42:08
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B02.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



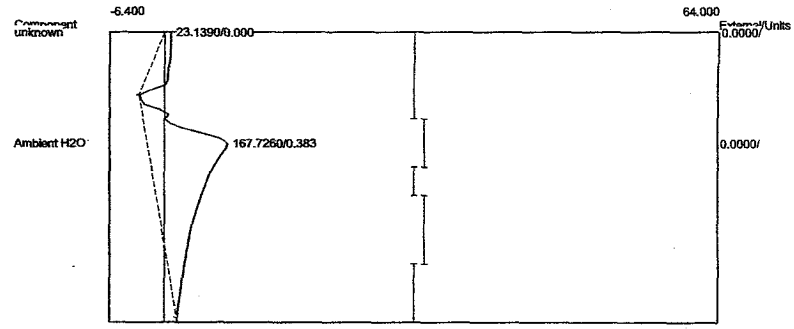
Component	Retention	Area	External	Units
Ambient H2O	0.383	171.1580	0.0000	
		171.1580	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:43:13
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B03.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



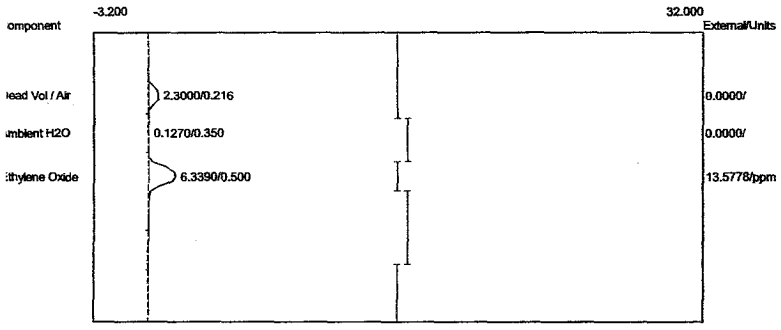
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2970	0.0000	
Ethylene Oxide	0.500	6.7150	14.3832	ppm
		9.0120	14.3832	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:43:13
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B03.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



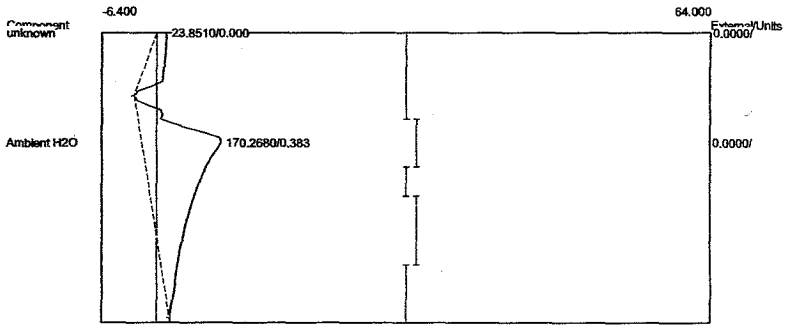
Component	Retention	Area	External	Units
Ambient H2O	0.383	167.7260	0.0000	
		167.7260	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:44:17
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B04.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



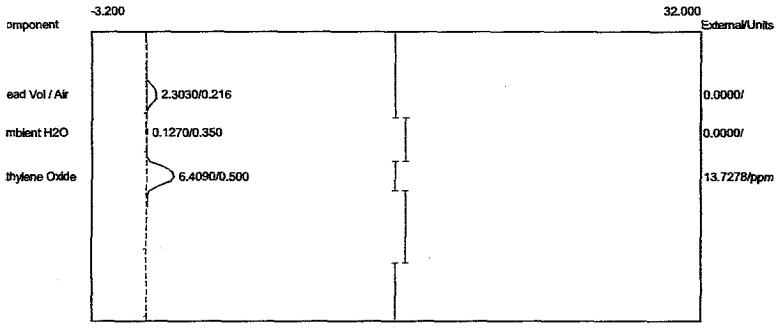
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3000	0.0000	
Ambient H2O	0.350	0.1270	0.0000	
Ethylene Oxide	0.500	6.3390	13.5778	ppm
		8.7660	13.5778	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:44:17
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B04.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



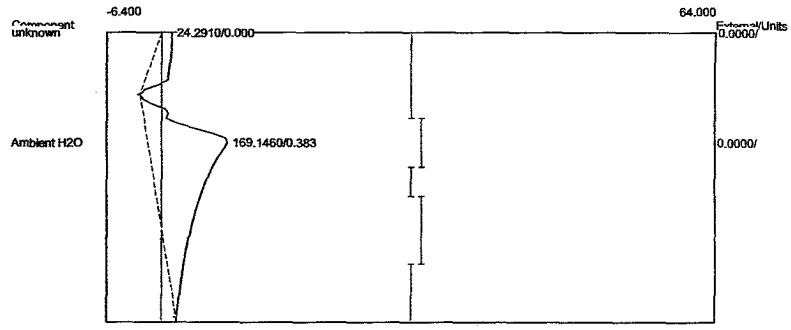
Component	Retention	Area	External	Units
Ambient H2O	0.383	170.2680	0.0000	
		170.2680	0.0000	

Lab name: ECO!
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:45:23
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B05.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



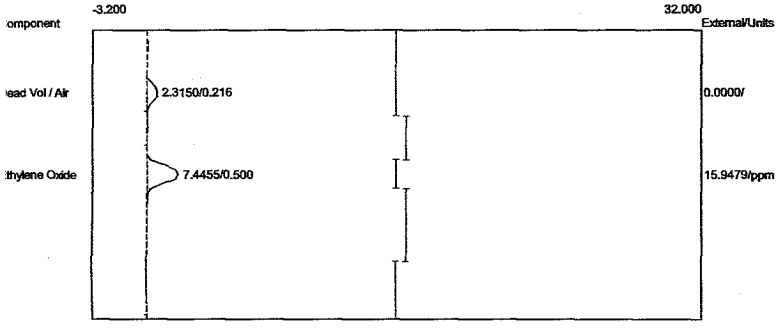
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3030	0.0000	
Ambient H2O	0.350	0.1270	0.0000	
Ethylene Oxide	0.500	6.4090	13.7278	ppm
		8.8390	13.7278	

Lab name: ECO!
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:45:23
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B05.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



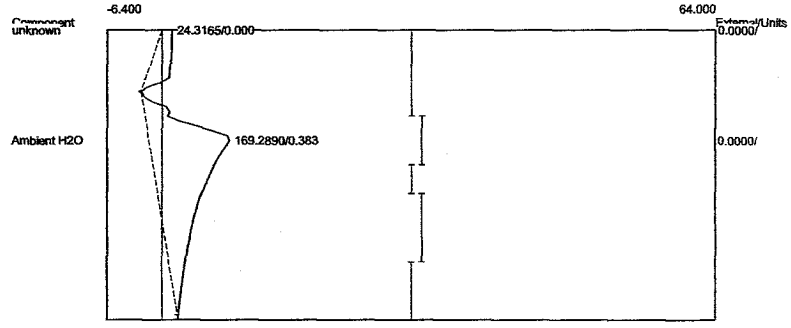
Component	Retention	Area	External	Units
Ambient H2O	0.383	169.1460	0.0000	
		169.1460	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:46:32
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B06.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



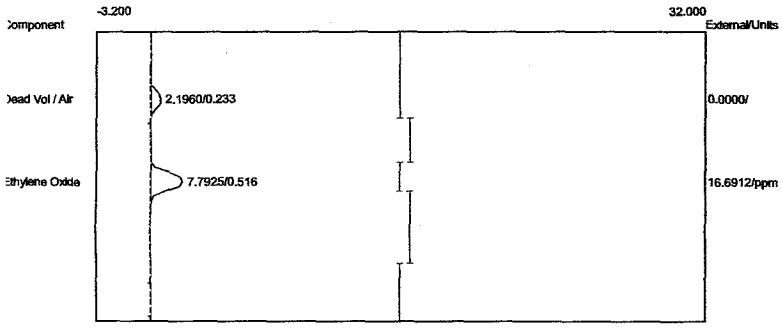
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3150	0.0000	
Ethylene Oxide	0.500	7.4455	15.9479	ppm
		9.7605	15.9479	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:46:32
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B06.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



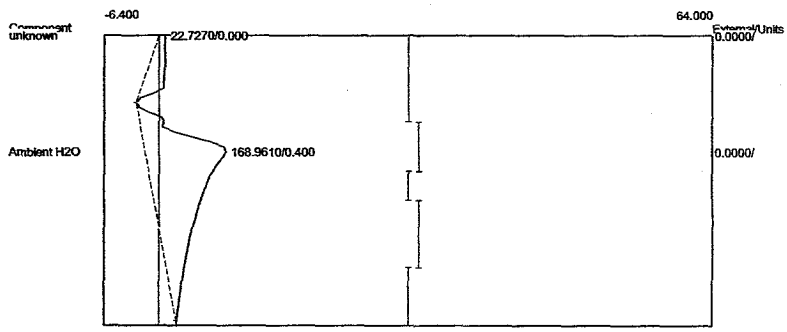
Component	Retention	Area	External	Units
Ambient H2O	0.383	169.2890	0.0000	
		169.2890	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:48:01
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B07.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



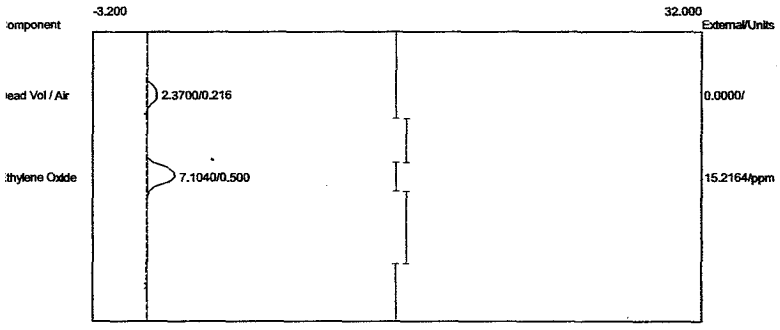
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.1960	0.0000	
Ethylene Oxide	0.516	7.7925	16.6912	ppm
		9.9885	16.6912	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:48:01
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B07.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



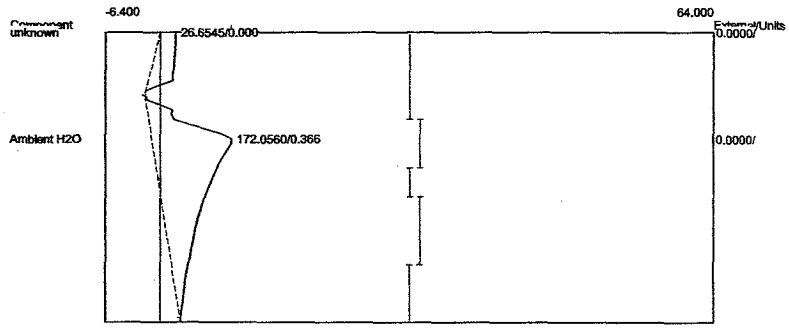
Component	Retention	Area	External	Units
Ambient H2O	0.400	168.9610	0.0000	
		168.9610	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:50:37
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B09.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



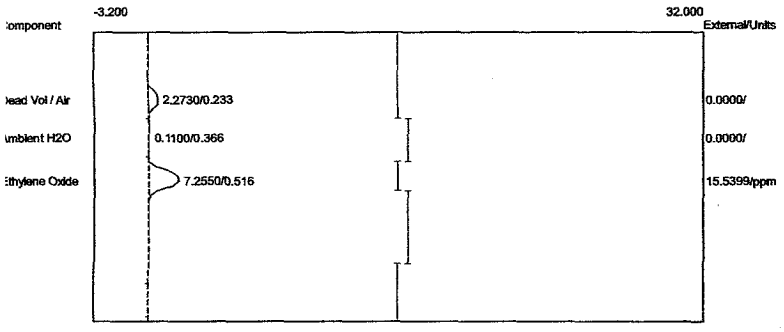
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3700	0.0000	
Ethylene Oxide	0.500	7.1040	15.2164	ppm
		9.4740	15.2164	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:50:37
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B09.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



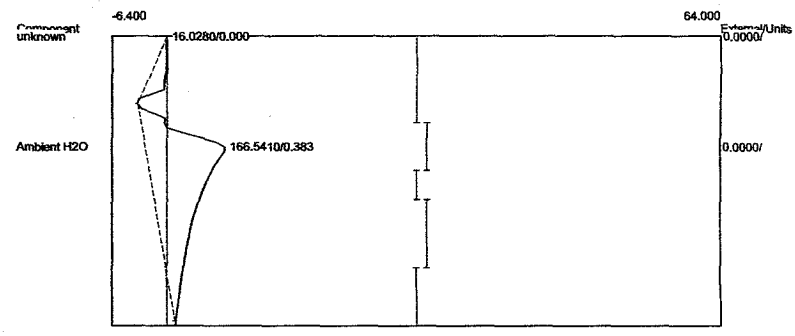
Component	Retention	Area	External	Units
Ambient H2O	0.366	172.0560	0.0000	
		172.0560	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:51:55
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B10.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



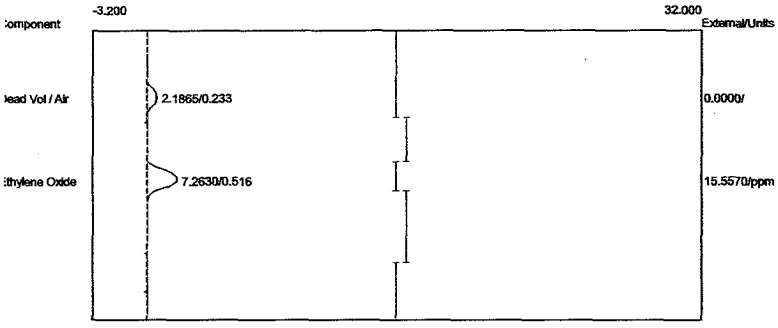
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2730	0.0000	
Ambient H2O	0.366	0.1100	0.0000	
Ethylene Oxide	0.516	7.2550	15.5399	ppm
		9.6380	15.5399	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:51:55
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B10.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



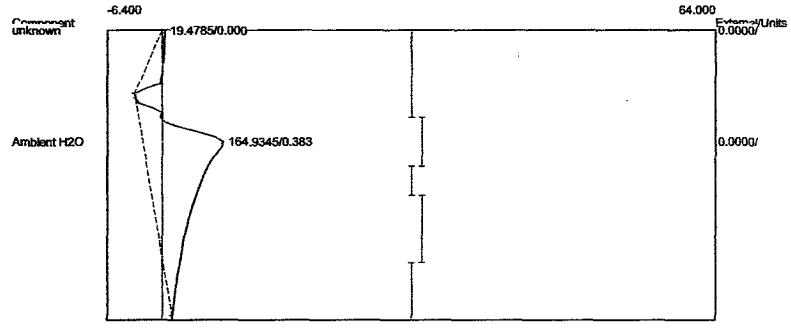
Component	Retention	Area	External	Units
Ambient H2O	0.383	166.5410	0.0000	
		166.5410	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:53:09
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B11.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



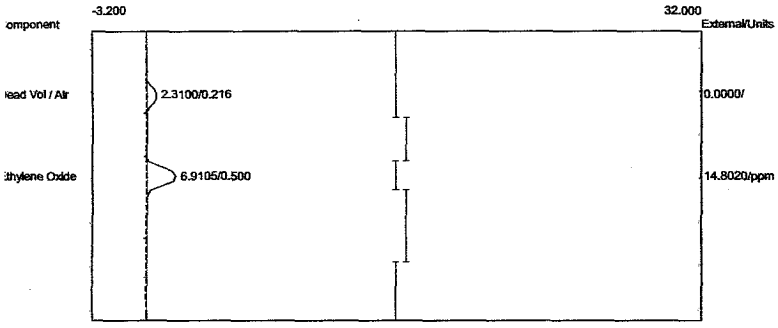
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.1865	0.0000	
Ethylene Oxide	0.516	7.2630	15.5570	ppm
		9.4495	15.5570	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:53:09
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B11.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



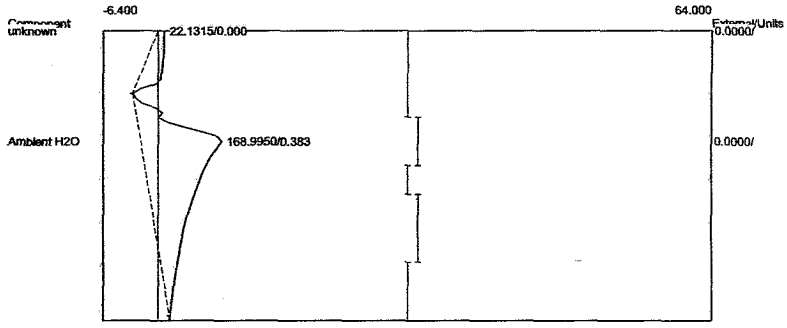
Component	Retention	Area	External	Units
Ambient H2O	0.383	164.9345	0.0000	
		164.9345	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:54:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B12.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



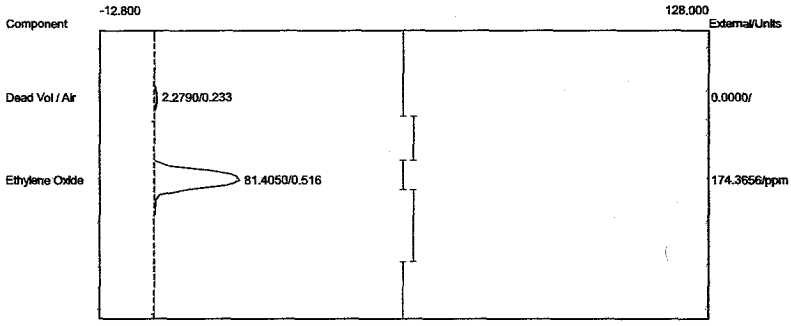
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3100	0.0000	
Ethylene Oxide	0.500	6.9105	14.8020	ppm
		9.2205	14.8020	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 09:54:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B12.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



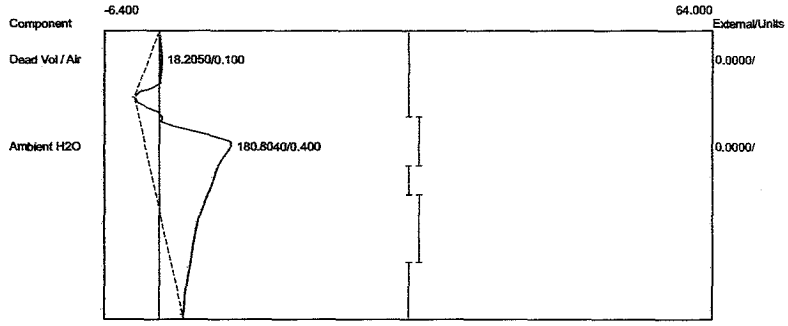
Component	Retention	Area	External	Units
Ambient H2O	0.383	168.9950	0.0000	
		168.9950	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:06:01
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B13.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



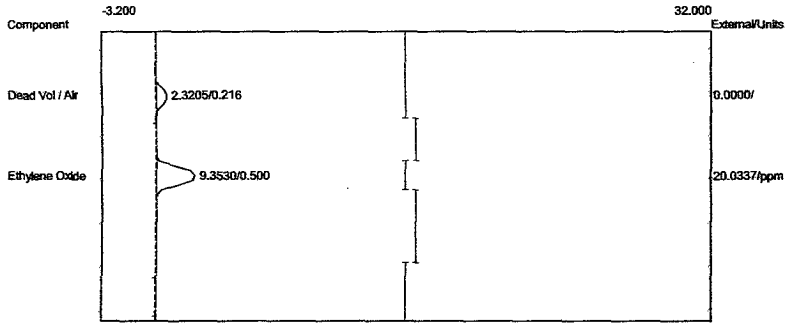
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2790	0.0000	
Ethylene Oxide	0.516	81.4050	174.3656	ppm
		83.6840	174.3656	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:06:01
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B13.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



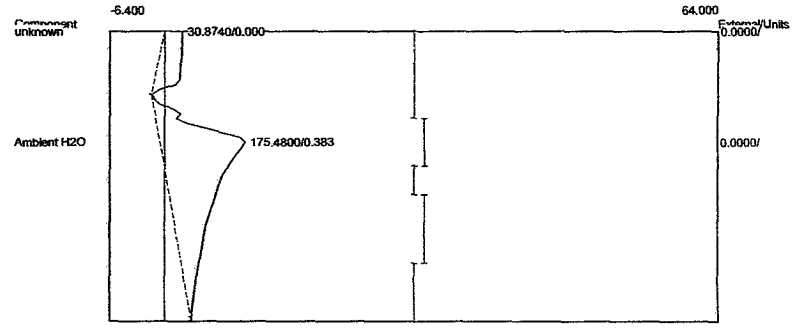
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	18.2050	0.0000	
Ambient H2O	0.400	180.8040	0.0000	
		199.0090	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:07:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B14.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



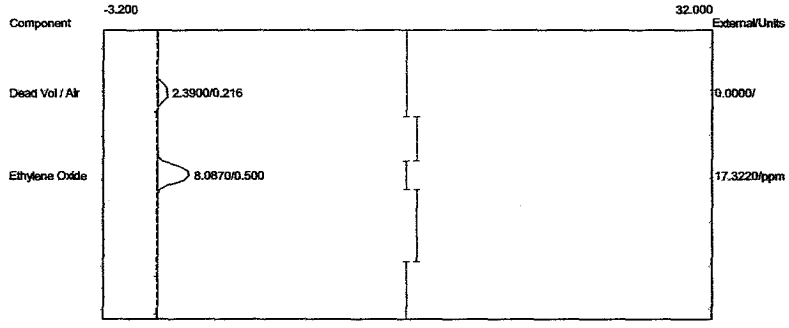
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3205	0.0000	
Ethylene Oxide	0.500	9.3530	20.0337	ppm
		11.6735	20.0337	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:07:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B14.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



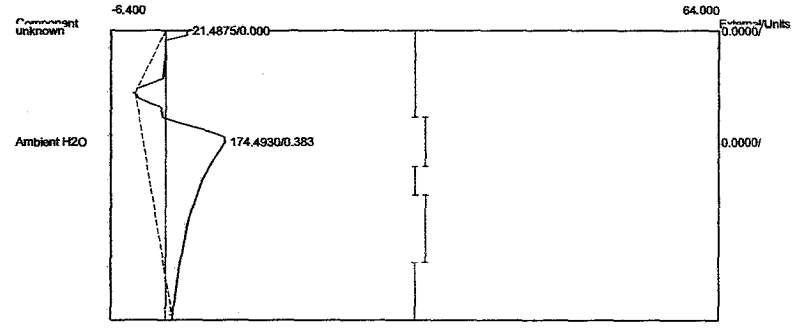
Component	Retention	Area	External	Units
Ambient H2O	0.383	175.4800	0.0000	
		175.4800	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:08:25
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B15.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



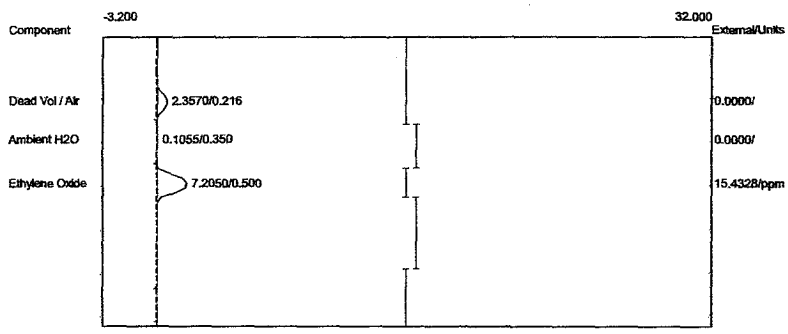
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3900	0.0000	
Ethylene Oxide	0.500	8.0870	17.3220	ppm
		10.4770	17.3220	

Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:08:25
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B15.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



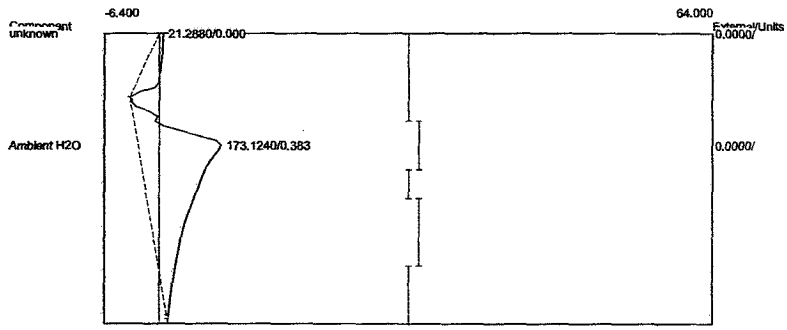
Component	Retention	Area	External	Units
Ambient H2O	0.383	174.4930	0.0000	
		174.4930	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:09:31
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B16.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



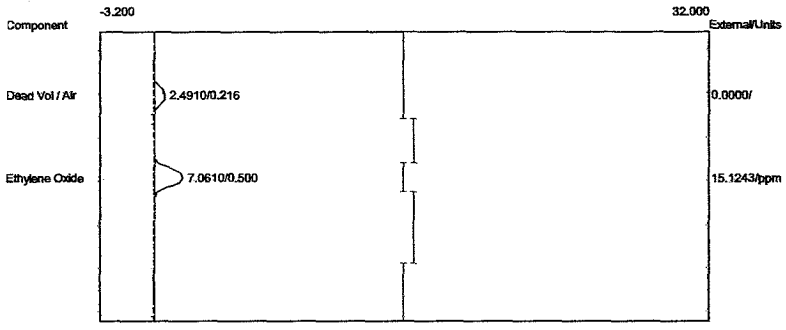
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3570	0.0000	
Ambient H2O	0.350	0.1055	0.0000	
Ethylene Oxide	0.500	7.2050	15.4328	ppm
		9.6675	15.4328	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:09:31
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B16.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



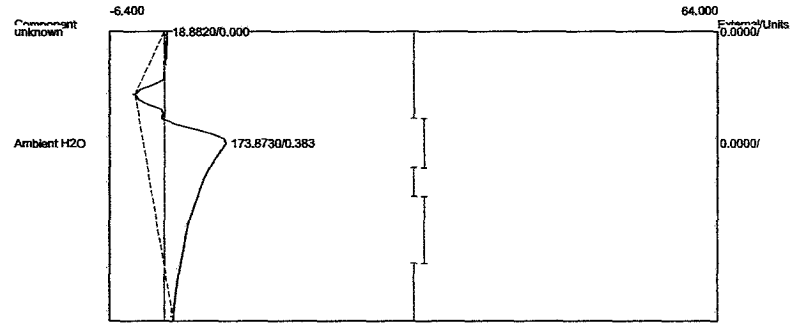
Component	Retention	Area	External	Units
Ambient H2O	0.383	173.1240	0.0000	
		173.1240	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:10:42
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B17.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



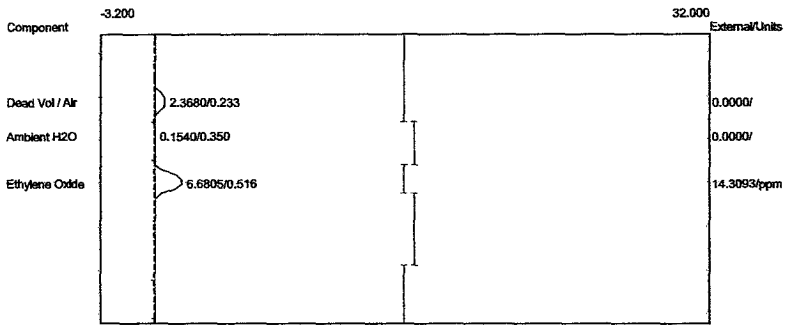
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4910	0.0000	
Ethylene Oxide	0.500	7.0610	15.1243	ppm
		9.5520	15.1243	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:10:42
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B17.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



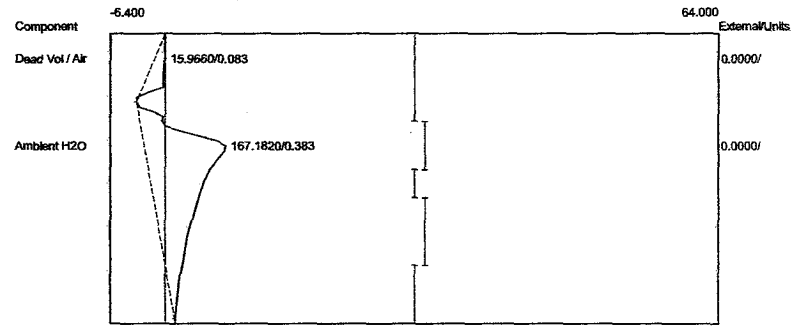
Component	Retention	Area	External	Units
Ambient H2O	0.383	173.8730	0.0000	
		173.8730	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:12:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B18.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



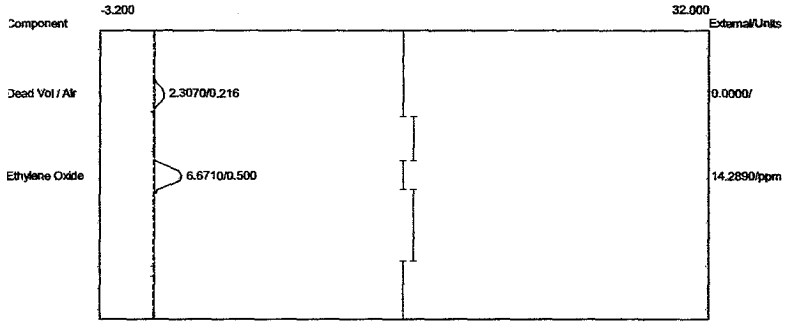
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3680	0.0000	
Ambient H2O	0.350	0.1540	0.0000	
Ethylene Oxide	0.516	6.6805	14.3093	ppm
		9.2025	14.3093	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:12:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B18.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



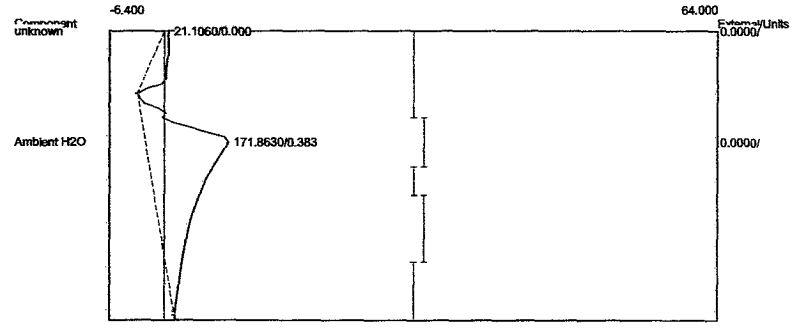
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	15.9660	0.0000	
Ambient H2O	0.383	167.1820	0.0000	
		183.1480	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:13:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B19.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



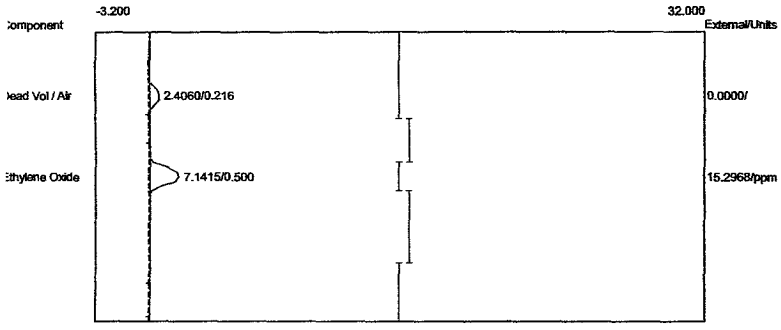
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3070	0.0000	
Ethylene Oxide	0.500	6.6710	14.2890	ppm
		8.9780	14.2890	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:13:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B19.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



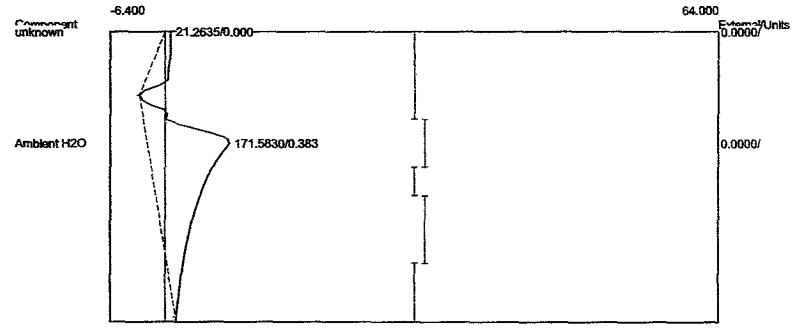
Component	Retention	Area	External	Units
Ambient H2O	0.383	171.8630	0.0000	
		171.8630	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:14:25
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B20.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



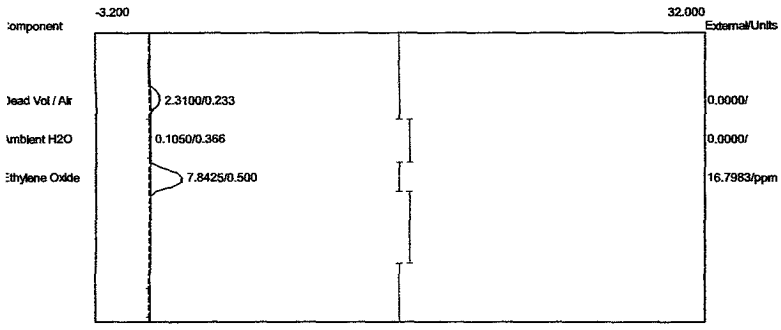
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4060	0.0000	
Ethylene Oxide	0.500	7.1415	15.2968	ppm
		9.5475	15.2968	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:14:25
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B20.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



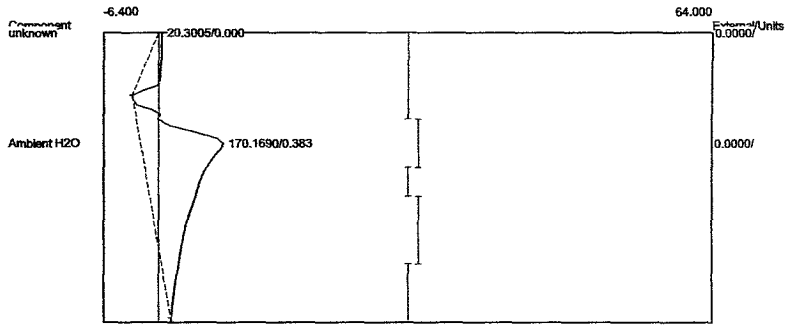
Component	Retention	Area	External	Units
Ambient H2O	0.383	171.5830	0.0000	
		171.5830	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:15:43
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B21.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



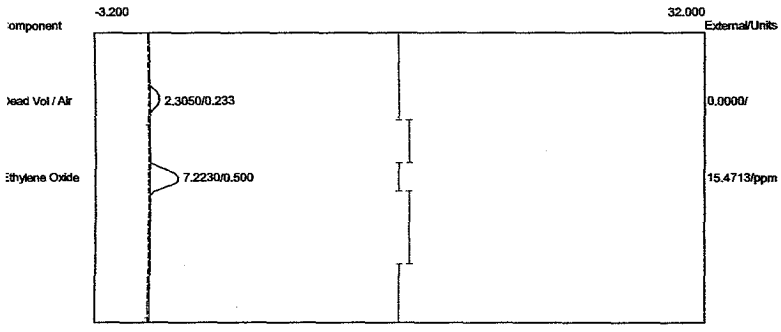
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3100	0.0000	
Ambient H2O	0.366	0.1050	0.0000	
Ethylene Oxide	0.500	7.8425	16.7983	ppm
		10.2575	16.7983	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:15:43
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B21.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



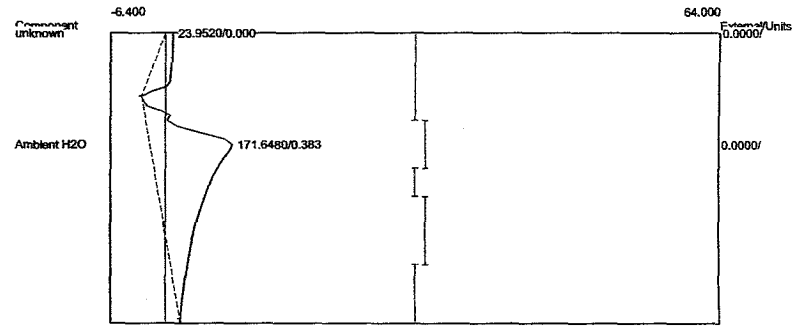
Component	Retention	Area	External	Units
Ambient H2O	0.383	170.1690	0.0000	
		170.1690	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:16:53
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B22.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



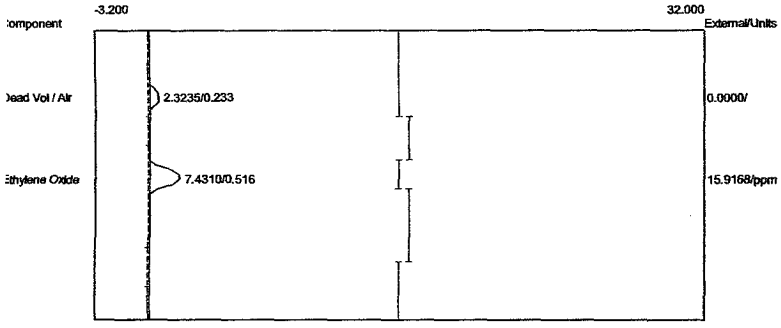
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3050	0.0000	
Ethylene Oxide	0.500	7.2230	15.4713	ppm
		9.5280	15.4713	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:16:53
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B22.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



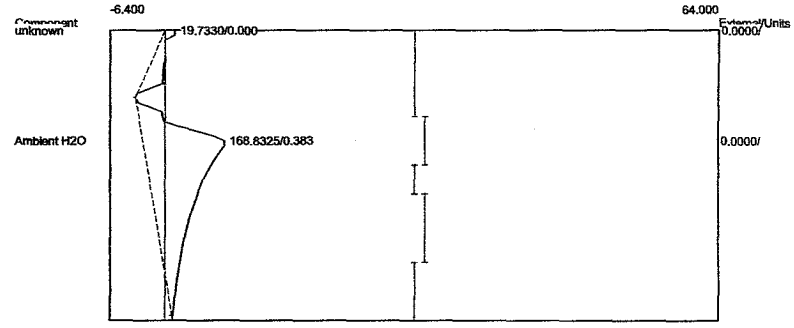
Component	Retention	Area	External	Units
Ambient H2O	0.383	171.6480	0.0000	
		171.6480	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:18:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B23.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



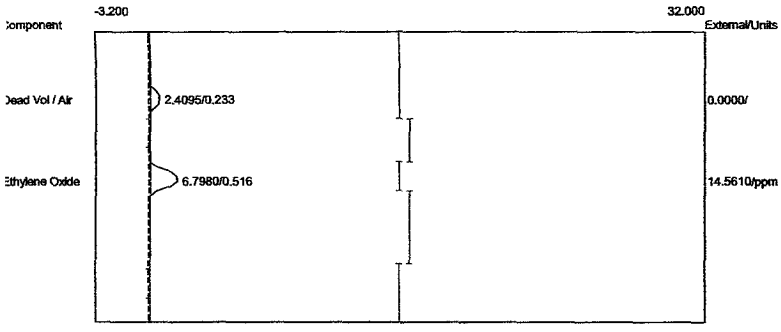
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3235	0.0000	
Ethylene Oxide	0.516	7.4310	15.9168	ppm
		9.7545	15.9168	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:18:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B23.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



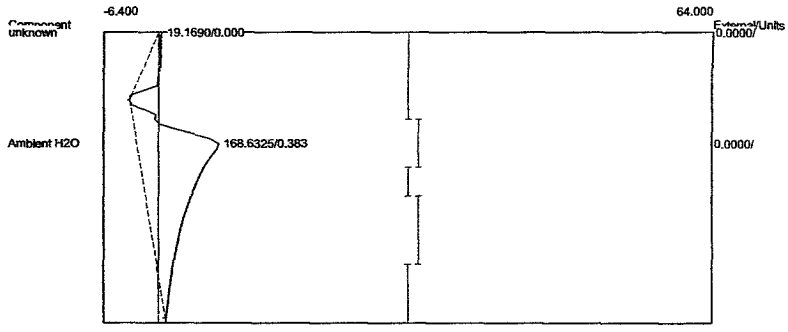
Component	Retention	Area	External	Units
Ambient H2O	0.383	168.8325	0.0000	
		168.8325	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:19:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1B24.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.4095	0.0000	
Ethylene Oxide	0.516	6.7980	14.5610	ppm
		9.2075	14.5610	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1BV
Analysis date: 11/17/2017 10:19:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1B24.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer

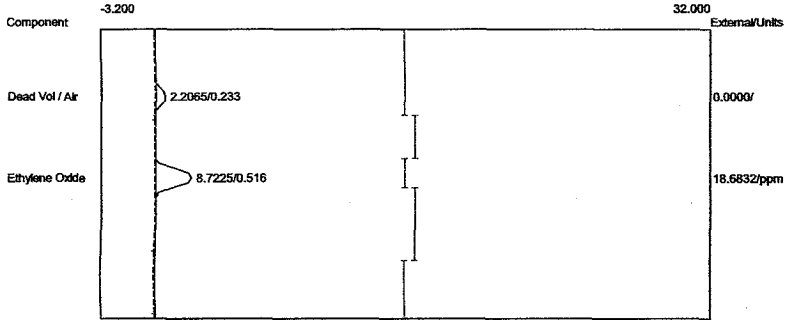


Component	Retention	Area	External	Units
Ambient H2O	0.383	168.6325	0.0000	
		168.6325	0.0000	

APPENDIX C

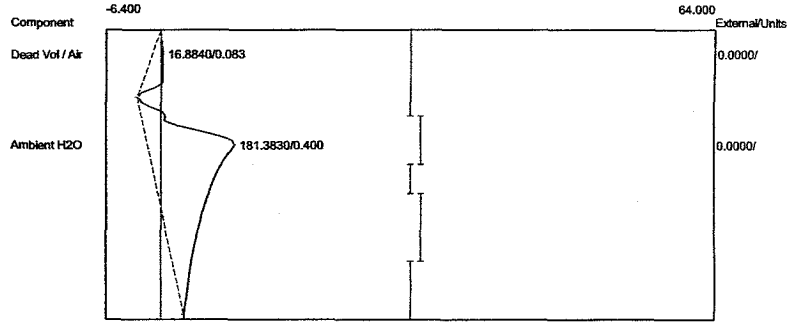
Aeration Chromatograms

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:30:46
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A01.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



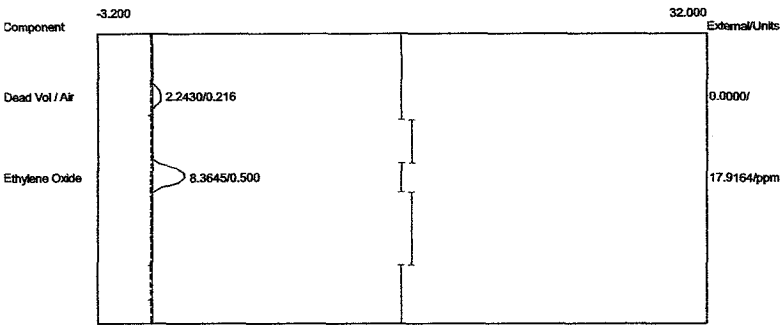
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2065	0.0000	
Ethylene Oxide	0.516	8.7225	18.6832	ppm
		10.9290	18.6832	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:30:46
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A01.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



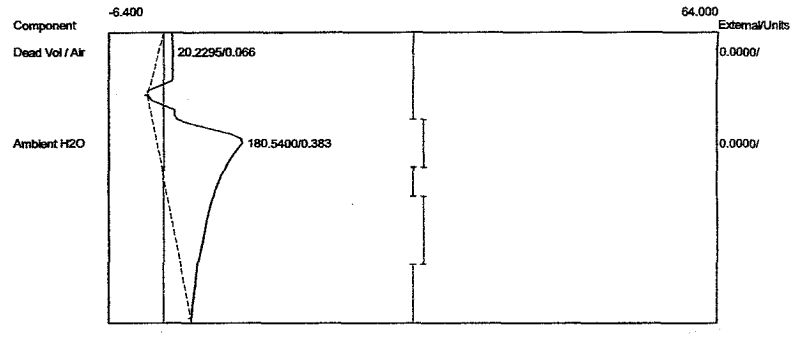
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	16.8840	0.0000	
Ambient H2O	0.400	181.3830	0.0000	
		198.2670	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:35:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A03.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



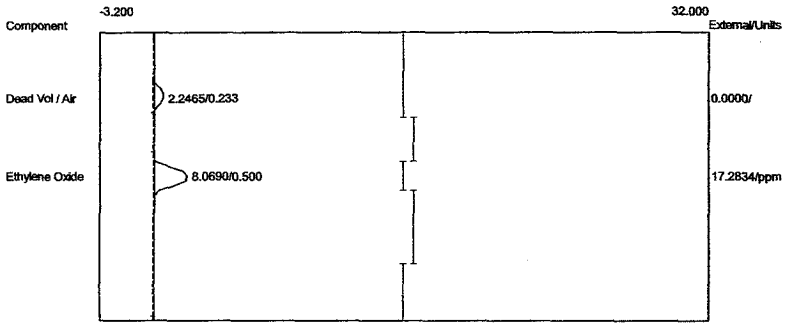
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.2430	0.0000	
Ethylene Oxide	0.500	8.3645	17.9164	ppm
		10.6075	17.9164	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:35:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A03.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



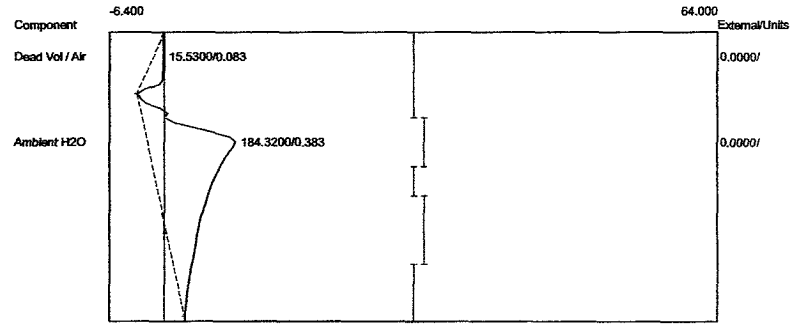
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	20.2295	0.0000	
Ambient H2O	0.383	180.5400	0.0000	
		200.7695	0.0000	

Lab Name: EOS
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:40:35
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A05.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



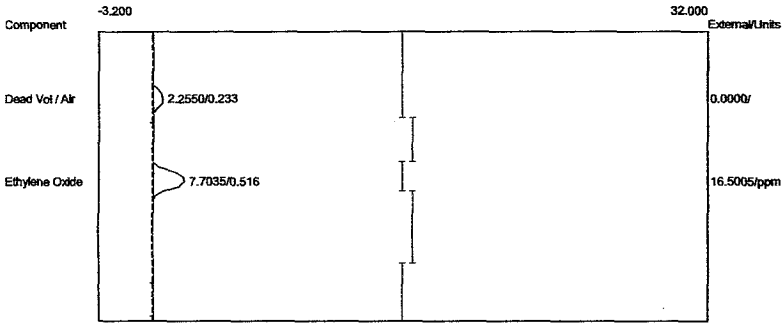
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2465	0.0000	
Ethylene Oxide	0.500	8.0690	17.2834	ppm
		10.3155	17.2834	

Lab Name: EOS
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:40:35
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A05.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



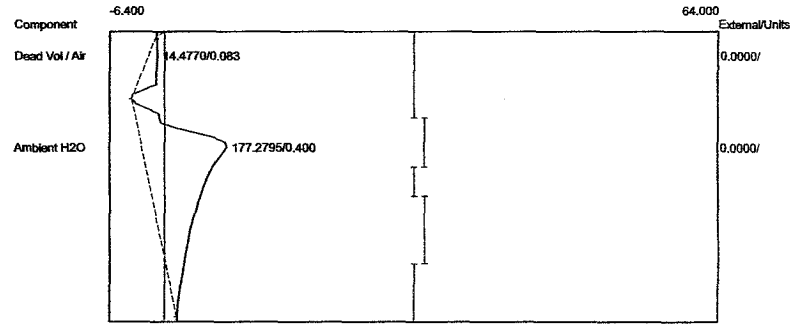
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	15.5300	0.0000	
Ambient H2O	0.383	184.3200	0.0000	
		199.8500	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:45:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A07.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



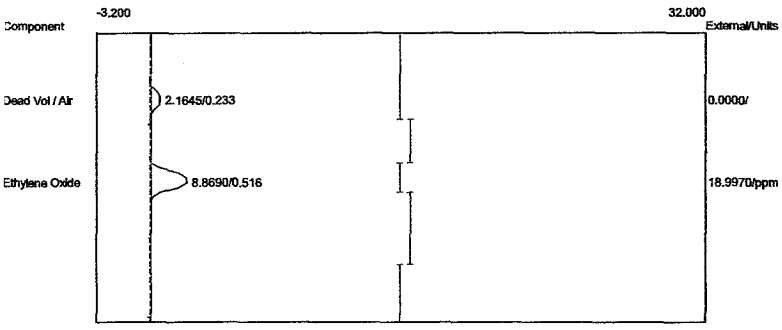
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2550	0.0000	
Ethylene Oxide	0.516	7.7035	16.5005	ppm
		9.9585	16.5005	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:45:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A07.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



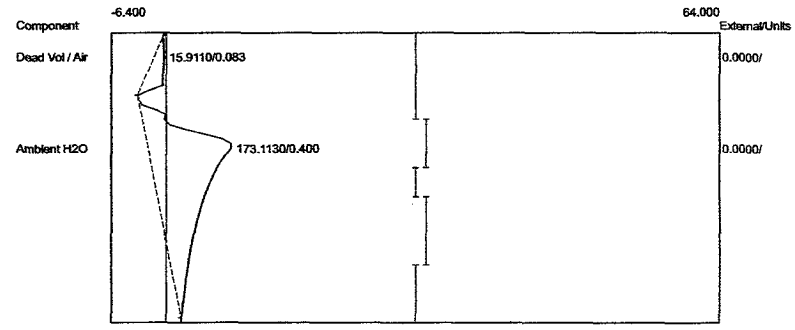
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	14.4770	0.0000	
Ambient H2O	0.400	177.2795	0.0000	
		191.7565	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:50:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A09.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



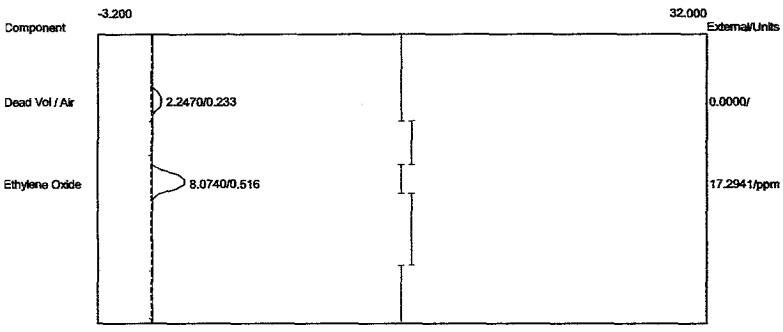
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.1645	0.0000	
Ethylene Oxide	0.516	8.8690	18.9970	ppm
		11.0335	18.9970	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:50:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A09.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



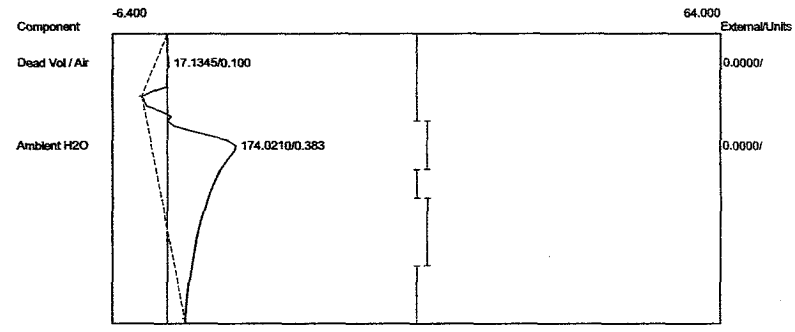
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	15.9110	0.0000	
Ambient H2O	0.400	173.1130	0.0000	
		189.0240	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:55:09
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A11.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



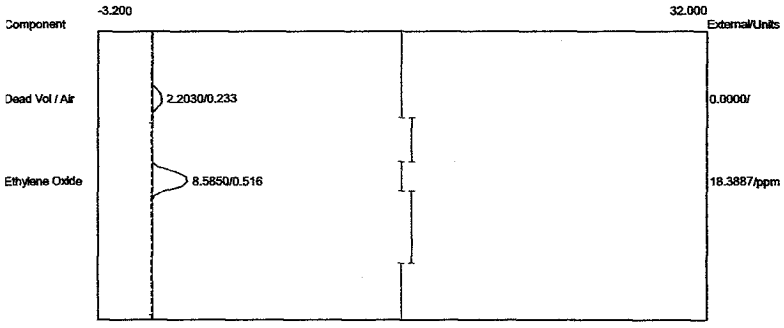
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2470	0.0000	
Ethylene Oxide	0.516	8.0740	17.2941	ppm
		10.3210	17.2941	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:55:09
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A11.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



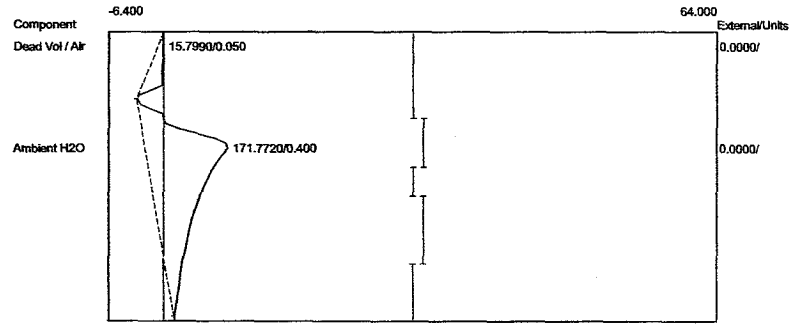
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	17.1345	0.0000	
Ambient H2O	0.383	174.0210	0.0000	
		191.1555	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:00:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A13.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



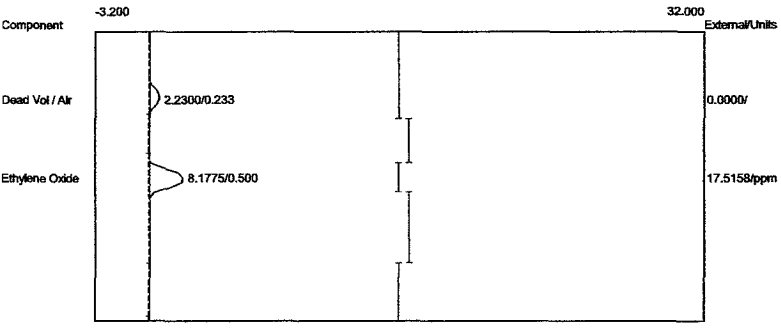
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2030	0.0000	
Ethylene Oxide	0.516	8.5850	18.3887	ppm
		10.7880	18.3887	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:00:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A13.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



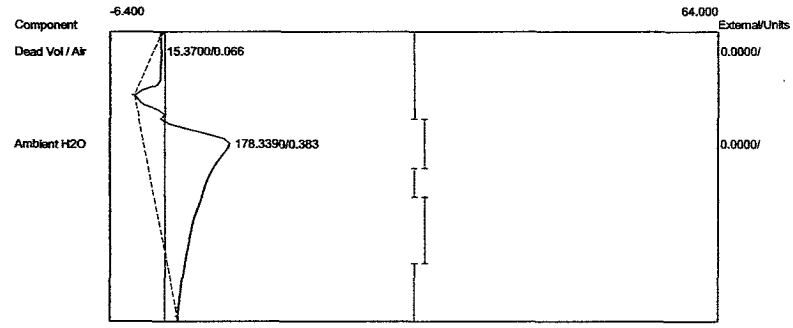
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	15.7990	0.0000	
Ambient H2O	0.400	171.7720	0.0000	
		187.5710	0.0000	

Lab name: ESC
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:05:29
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A15.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



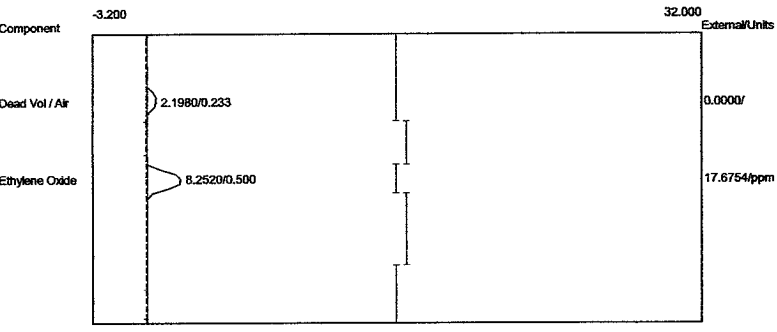
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2300	0.0000	
Ethylene Oxide	0.500	8.1775	17.5158	ppm
		10.4075	17.5158	

Lab name: ESC
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:05:29
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A15.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



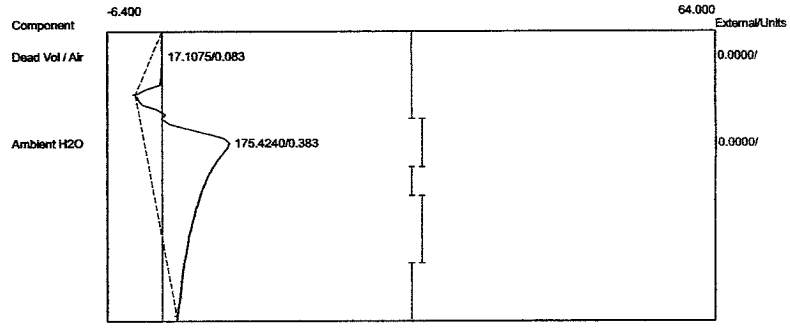
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	15.3700	0.0000	
Ambient H2O	0.383	178.3390	0.0000	
		193.7090	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:10:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A17.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



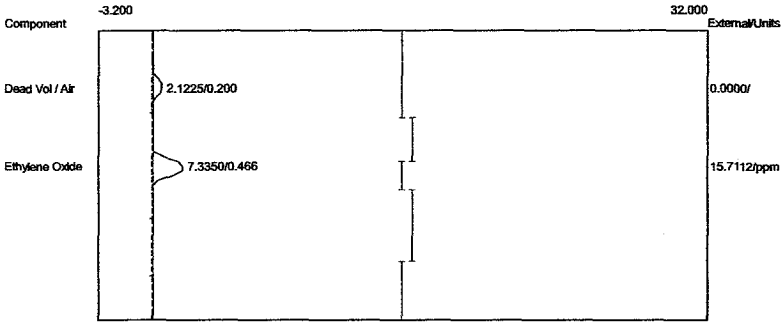
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.1980	0.0000	
Ethylene Oxide	0.500	8.2520	17.6754	ppm
		10.4500	17.6754	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:10:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A17.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



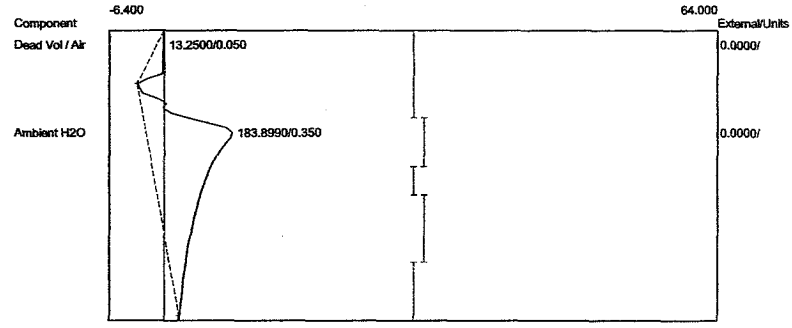
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	17.1075	0.0000	
Ambient H2O	0.383	175.4240	0.0000	
		192.5315	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:15:23
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A19.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



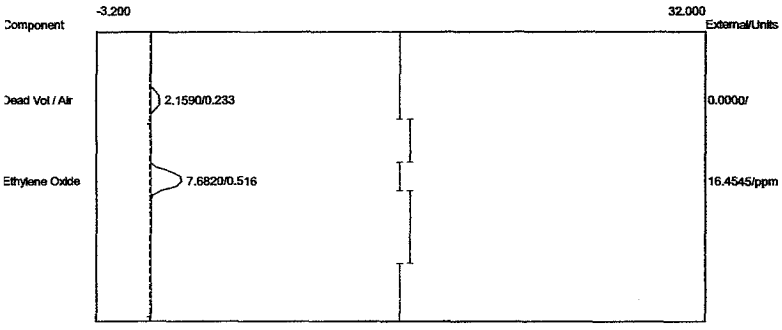
Component	Retention	Area	External	Units
Dead Vol / Air	0.200	2.1225	0.0000	
Ethylene Oxide	0.466	7.3350	15.7112	ppm
		9.4575	15.7112	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:15:23
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A19.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



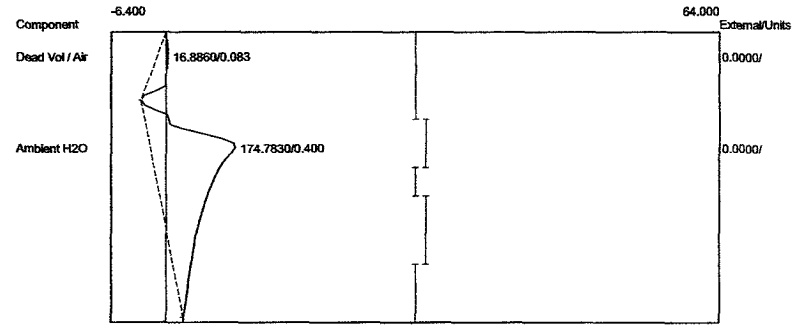
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	13.2500	0.0000	
Ambient H2O	0.350	183.8990	0.0000	
		197.1490	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:20:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A21.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



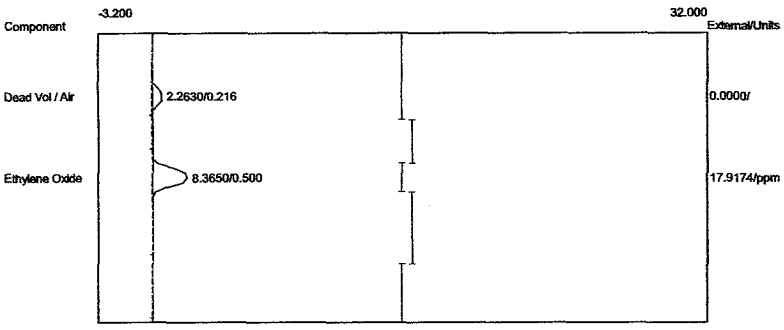
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.1590	0.0000	
Ethylene Oxide	0.516	7.6820	16.4545	ppm
		9.8410	16.4545	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:20:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A21.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



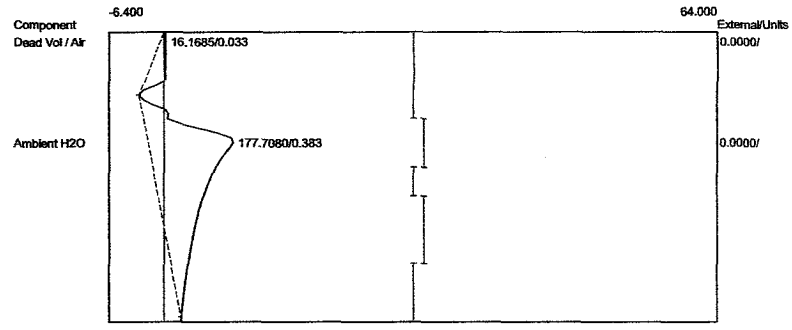
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	16.8860	0.0000	
Ambient H2O	0.400	174.7830	0.0000	
		191.6690	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:25:26
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A23.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



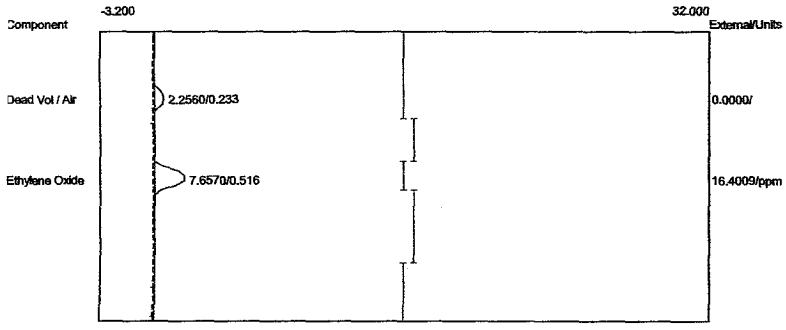
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.2630	0.0000	
Ethylene Oxide	0.500	8.3650	17.9174	ppm
		10.6280	17.9174	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:25:26
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A23.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



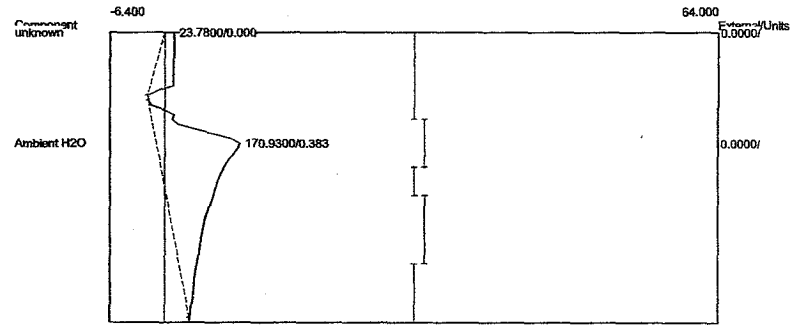
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	16.1685	0.0000	
Ambient H2O	0.383	177.7080	0.0000	
		193.8765	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:32:46
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A02.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



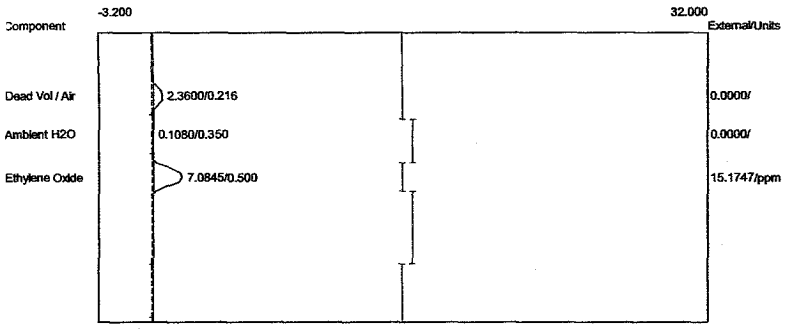
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2560	0.0000	
Ethylene Oxide	0.516	7.6570	16.4009	ppm
		9.9130	16.4009	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:32:46
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A02.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



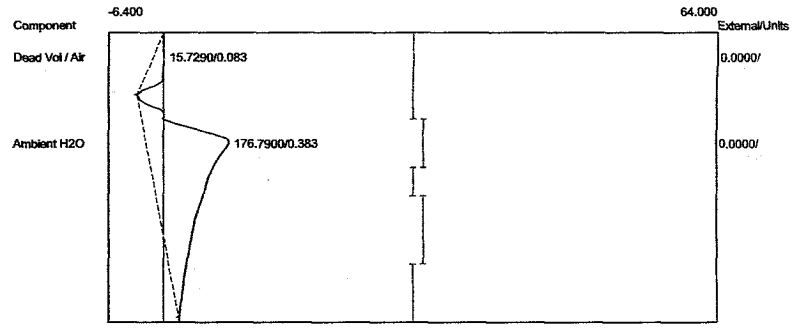
Component	Retention	Area	External	Units
Ambient H2O	0.383	170.9300	0.0000	
		170.9300	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:37:16
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A04.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



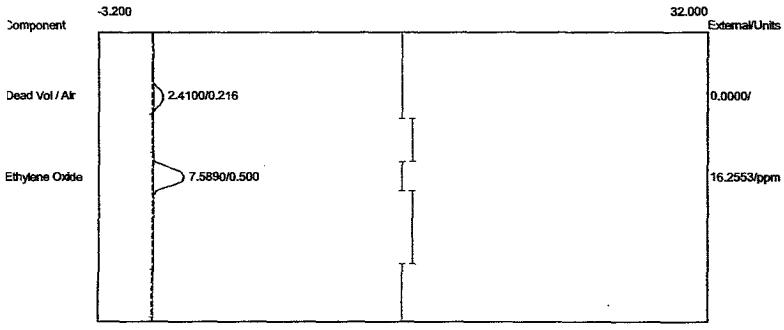
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3600	0.0000	
Ambient H2O	0.350	0.1080	0.0000	
Ethylene Oxide	0.500	7.0845	15.1747	ppm
		9.5525	15.1747	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:37:16
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A04.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



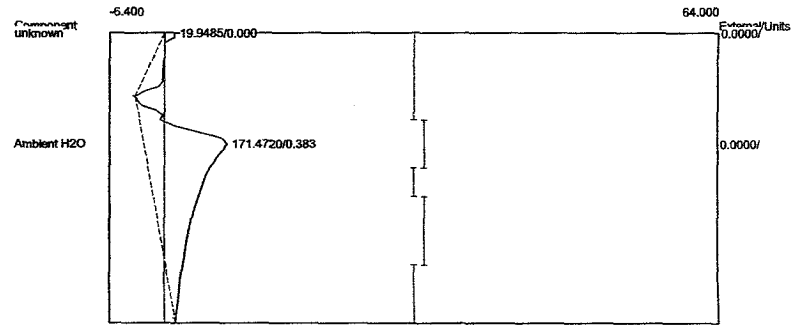
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	15.7290	0.0000	
Ambient H2O	0.383	176.7900	0.0000	
		192.5190	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:42:10
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A06.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



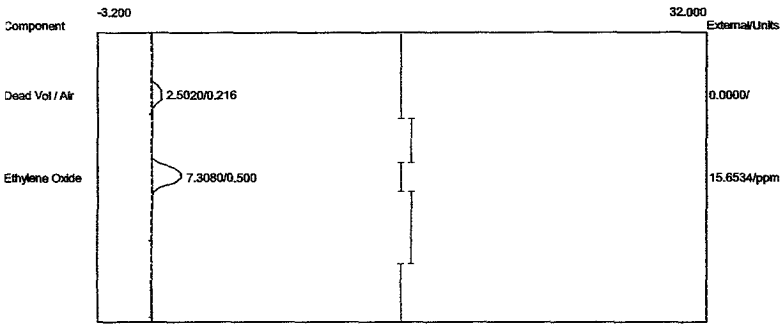
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4100	0.0000	
Ethylene Oxide	0.500	7.5890	16.2553	ppm
		9.9990	16.2553	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:42:10
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A06.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



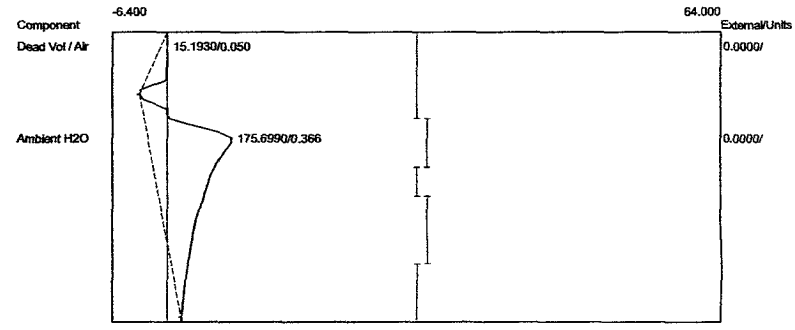
Component	Retention	Area	External	Units
Ambient H2O	0.383	171.4720	0.0000	
		171.4720	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:47:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A08.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



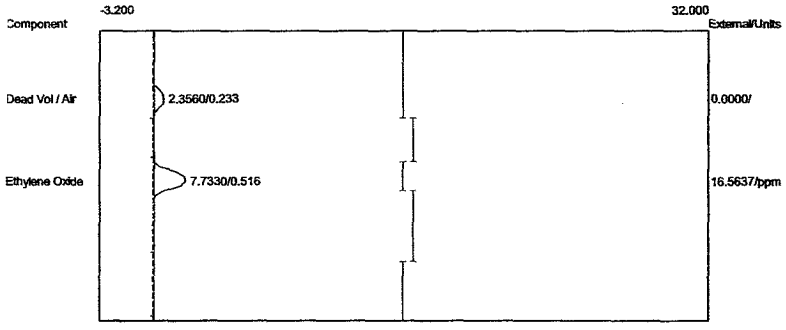
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.5020	0.0000	
Ethylene Oxide	0.500	7.3080	15.6534	ppm
		9.8100	15.6534	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:47:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A08.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



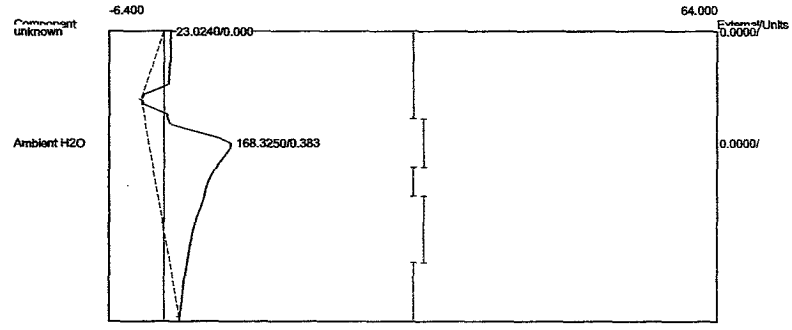
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	15.1930	0.0000	
Ambient H2O	0.366	175.6990	0.0000	
		190.8920	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:52:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A10.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



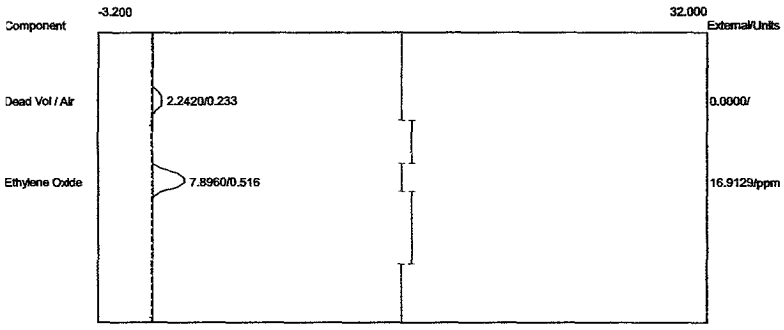
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3560	0.0000	
Ethylene Oxide	0.516	7.7330	16.5637	ppm
		10.0890	16.5637	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:52:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A10.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



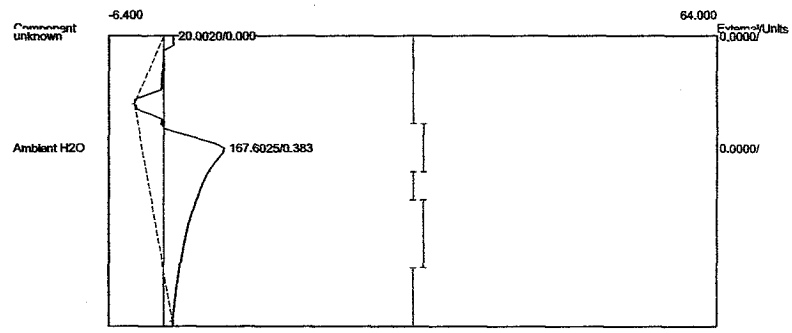
Component	Retention	Area	External	Units
Ambient H2O	0.383	168.3250	0.0000	
		168.3250	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:57:25
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A12.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



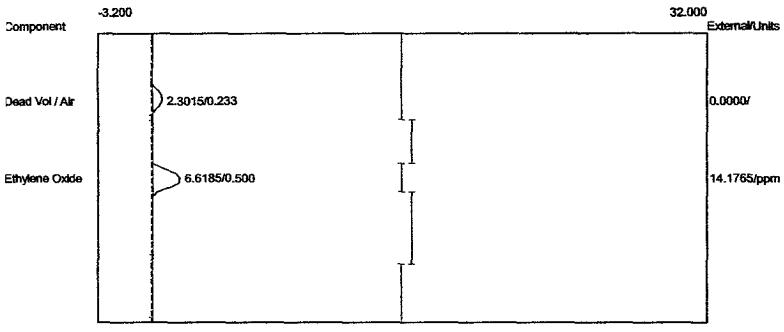
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2420	0.0000	
Ethylene Oxide	0.516	7.8960	16.9129	ppm
		10.1380	16.9129	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 10:57:25
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A12.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



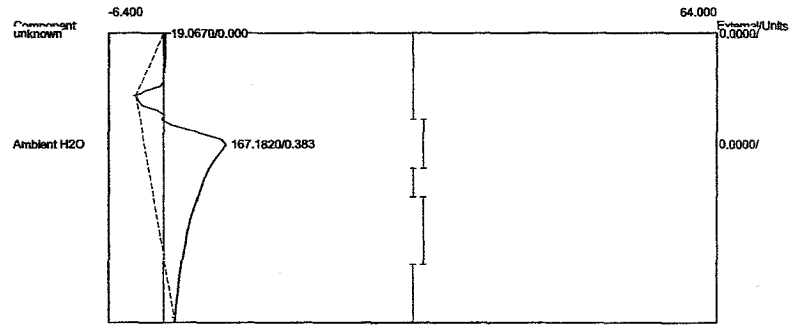
Component	Retention	Area	External	Units
Ambient H2O	0.383	167.6025	0.0000	
		167.6025	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:02:33
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A14.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



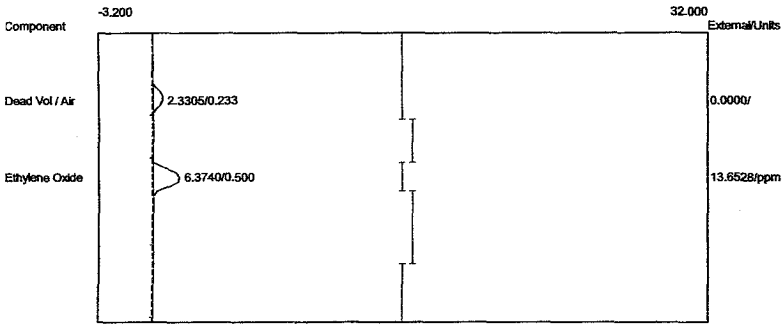
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3015	0.0000	
Ethylene Oxide	0.500	6.6185	14.1765	ppm
		8.9200	14.1765	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:02:33
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A14.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



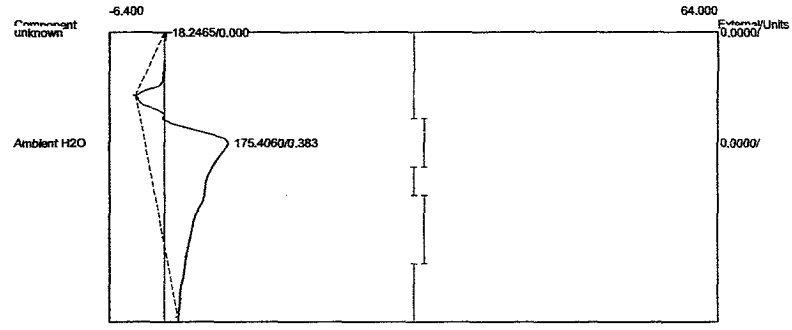
Component	Retention	Area	External	Units
Ambient H2O	0.383	167.1820	0.0000	
		167.1820	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:07:10
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A16.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



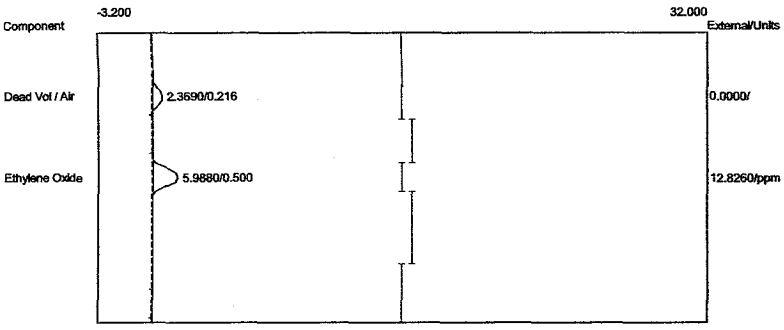
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3305	0.0000	
Ethylene Oxide	0.500	6.3740	13.6528	ppm
		8.7045	13.6528	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:07:10
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A16.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



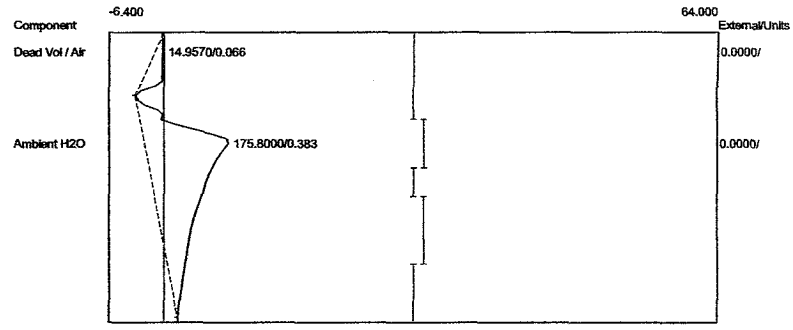
Component	Retention	Area	External	Units
Ambient H2O	0.383	175.4060	0.0000	
		175.4060	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:12:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A18.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



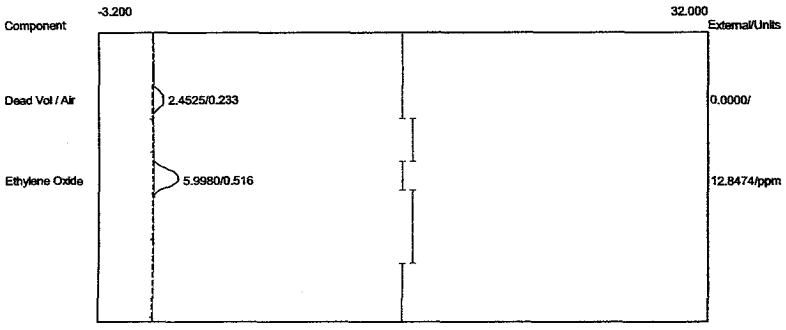
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3690	0.0000	
Ethylene Oxide	0.500	5.9880	12.8260	ppm
		8.3570	12.8260	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:12:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A18.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



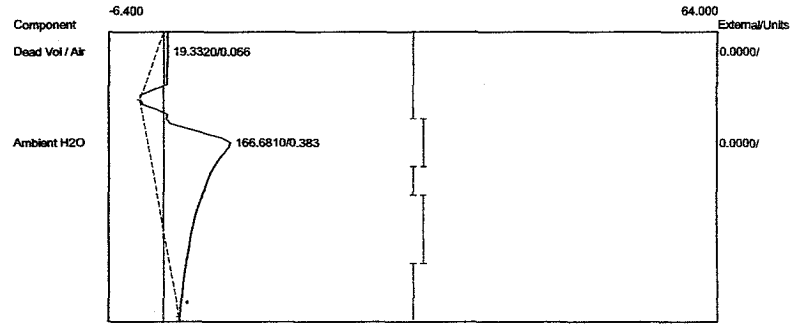
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	14.9570	0.0000	
Ambient H2O	0.383	175.8000	0.0000	
		190.7570	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:17:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A20.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



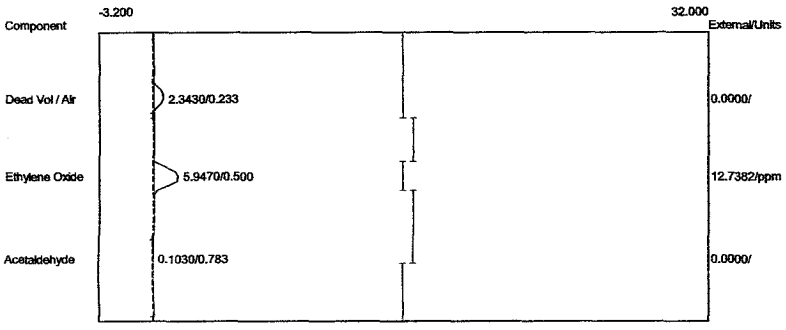
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.4525	0.0000	
Ethylene Oxide	0.516	5.9980	12.8474	ppm
		8.4505	12.8474	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:17:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A20.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



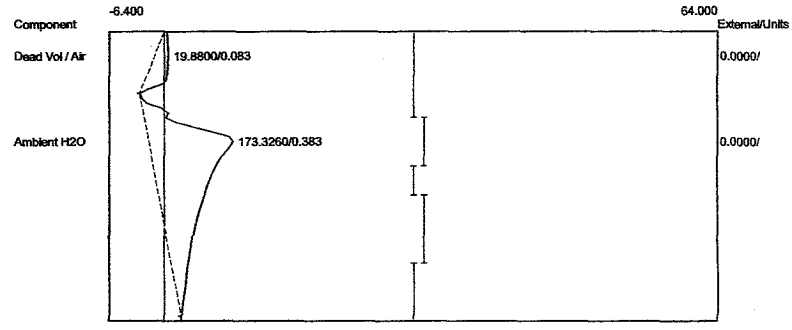
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	19.3320	0.0000	
Ambient H2O	0.383	166.6810	0.0000	
		186.0130	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:22:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A22.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



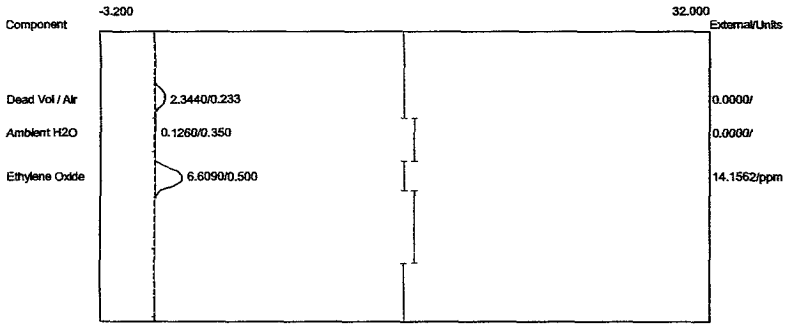
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3430	0.0000	
Ethylene Oxide	0.500	5.9470	12.7382	ppm
Acetaldehyde	0.783	0.1030	0.0000	
		8.3930	12.7382	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:22:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A22.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



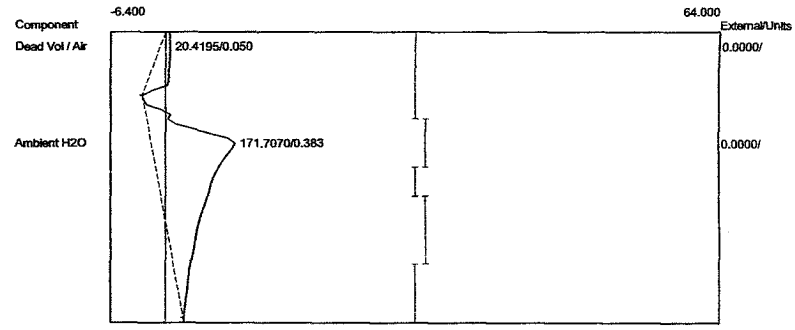
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	19.8800	0.0000	
Ambient H2O	0.383	173.3260	0.0000	
		193.2060	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:27:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-1A24.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



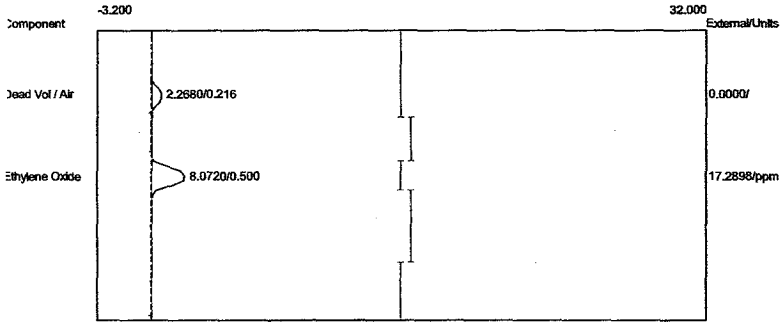
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3440	0.0000	
Ambient H2O	0.350	0.1260	0.0000	
Ethylene Oxide	0.500	6.6090	14.1562	ppm
		9.0790	14.1562	

Client: Sterigenics - Ontario
Client ID: Run#1Aer
Analysis date: 11/17/2017 11:27:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-1A24.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



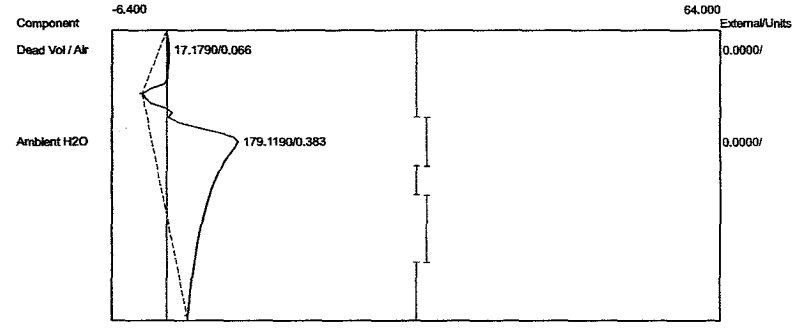
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	20.4195	0.0000	
Ambient H2O	0.383	171.7070	0.0000	
		192.1265	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:30:53
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A01.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



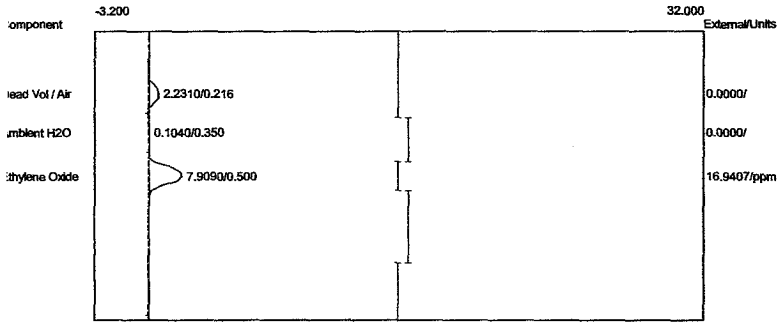
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.2680	0.0000	
Ethylene Oxide	0.500	8.0720	17.2898	ppm
		10.3400	17.2898	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:30:53
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A01.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



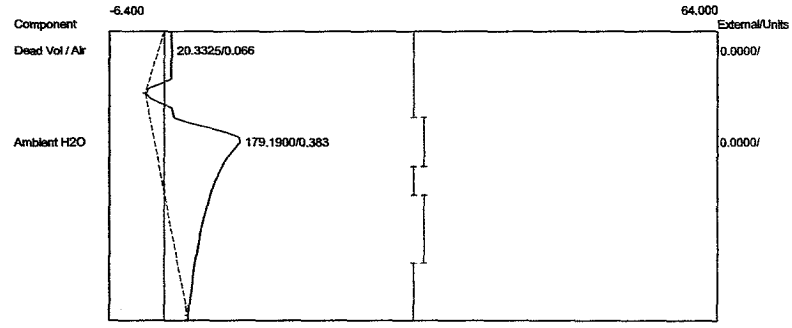
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	17.1790	0.0000	
Ambient H2O	0.383	179.1190	0.0000	
		196.2980	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:35:29
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A03.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



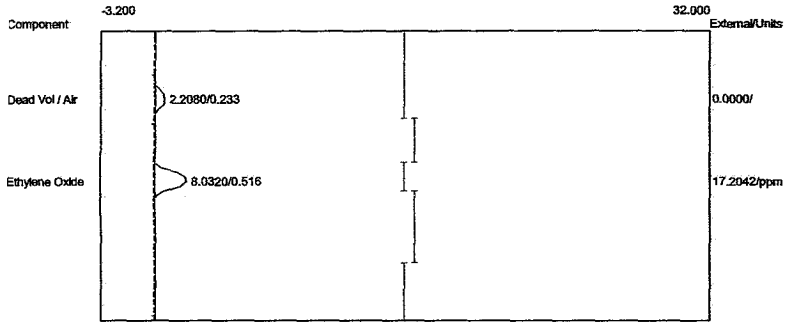
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.2310	0.0000	
Ambient H2O	0.350	0.1040	0.0000	
Ethylene Oxide	0.500	7.9090	16.9407	ppm
		10.2440	16.9407	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:35:29
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A03.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



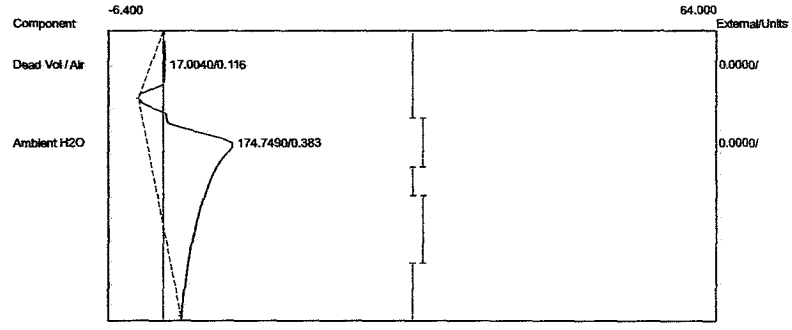
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	20.3325	0.0000	
Ambient H2O	0.383	179.1900	0.0000	
		199.5225	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:40:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A05.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



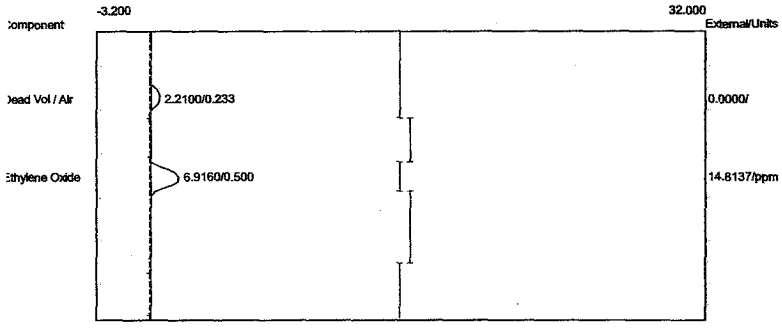
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2080	0.0000	
Ethylene Oxide	0.516	8.0320	17.2042	ppm
		10.2400	17.2042	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:40:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A05.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



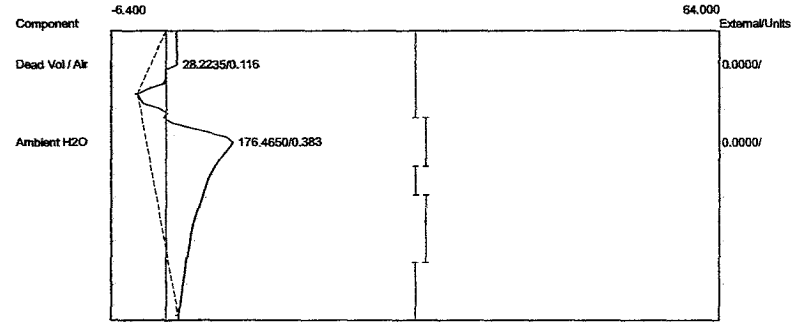
Component	Retention	Area	External	Units
Dead Vol / Air	0.116	17.0040	0.0000	
Ambient H2O	0.383	174.7490	0.0000	
		191.7530	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:45:17
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A07.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



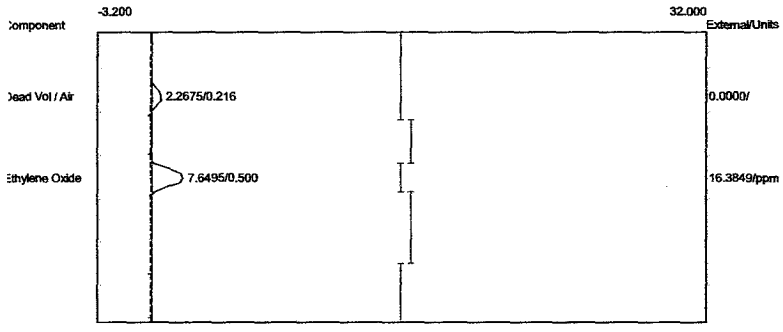
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2100	0.0000	
Ethylene Oxide	0.500	6.9160	14.8137	ppm
		9.1260	14.8137	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:45:17
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A07.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



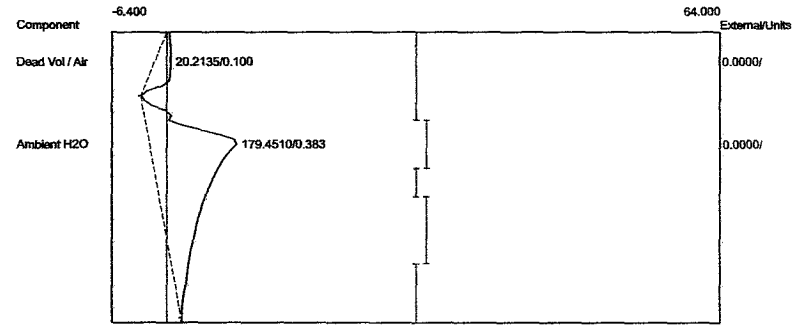
Component	Retention	Area	External	Units
Dead Vol / Air	0.116	28.2235	0.0000	
Ambient H2O	0.383	176.4650	0.0000	
		204.6885	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:50:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A09.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



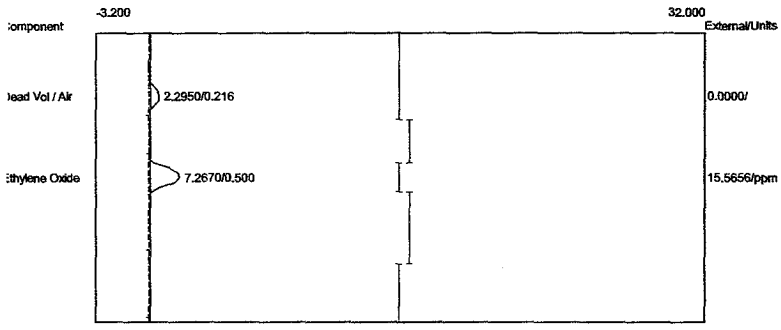
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.2675	0.0000	
Ethylene Oxide	0.500	7.6495	16.3849	ppm
		9.9170	16.3849	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:50:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A09.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



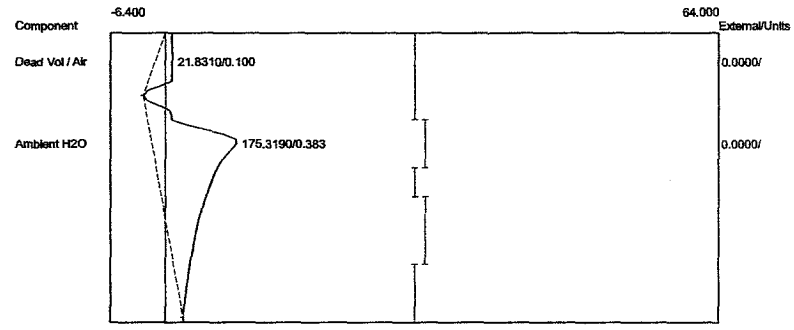
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	20.2135	0.0000	
Ambient H2O	0.383	179.4510	0.0000	
		199.6645	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:55:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A11.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



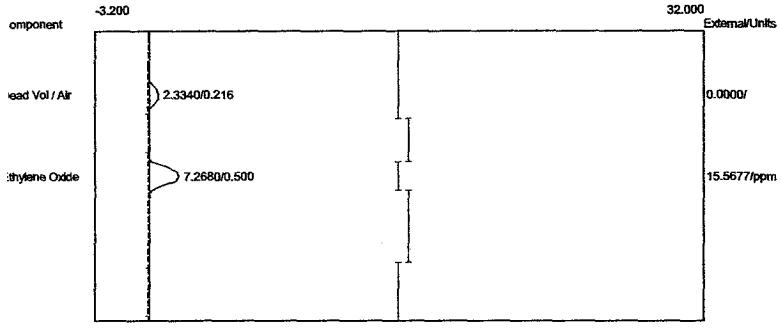
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.2950	0.0000	
Ethylene Oxide	0.500	7.2670	15.5656	ppm
		9.5620	15.5656	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:55:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A11.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



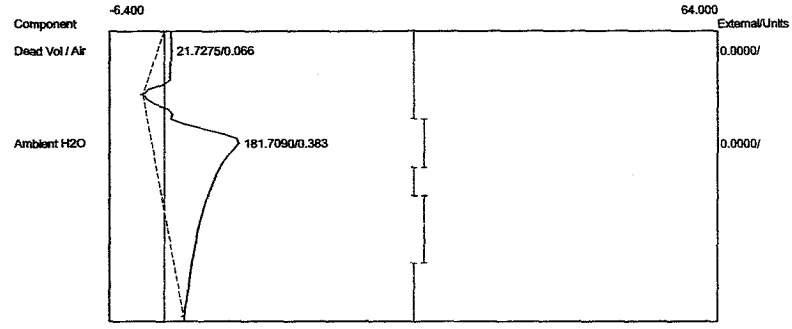
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	21.8310	0.0000	
Ambient H2O	0.383	175.3190	0.0000	
		197.1500	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:00:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A13.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



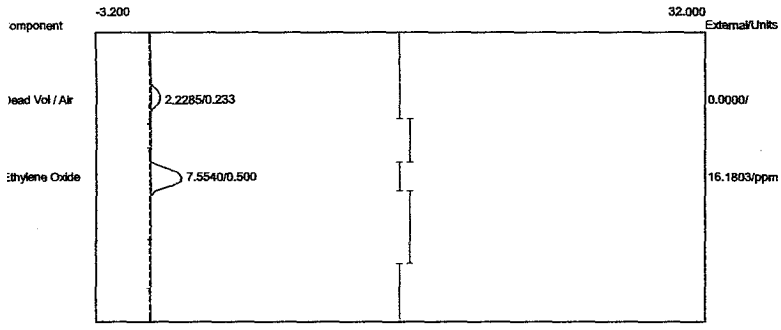
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3340	0.0000	
Ethylene Oxide	0.500	7.2680	15.5677	ppm
		9.6020	15.5677	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:00:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A13.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



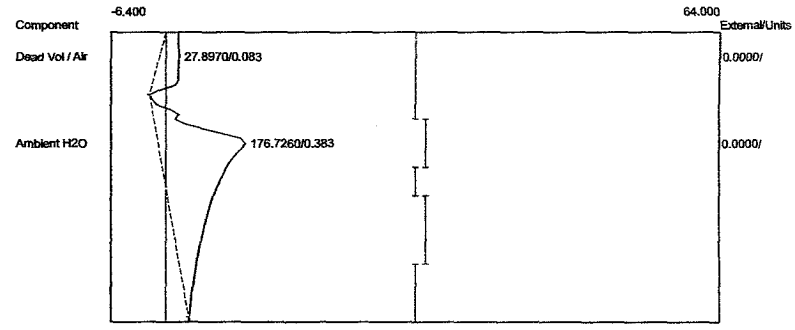
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	21.7275	0.0000	
Ambient H2O	0.383	181.7090	0.0000	
		203.4365	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:05:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A15.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



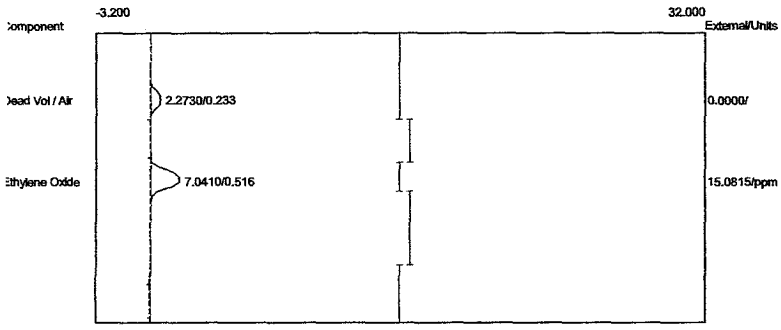
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2285	0.0000	
Ethylene Oxide	0.500	7.5540	16.1803	ppm
		9.7825	16.1803	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:05:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A15.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



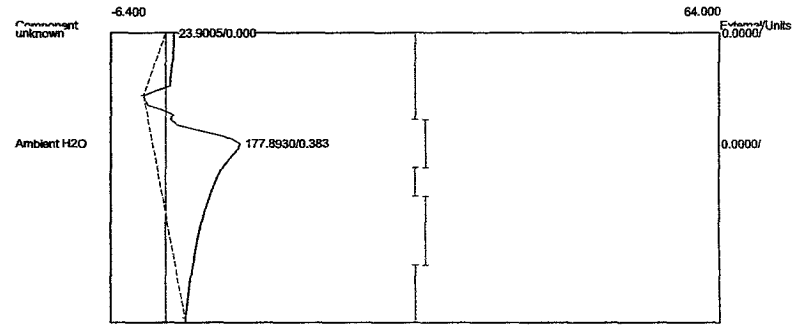
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	27.8970	0.0000	
Ambient H2O	0.383	176.7260	0.0000	
		204.6230	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:10:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A17.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



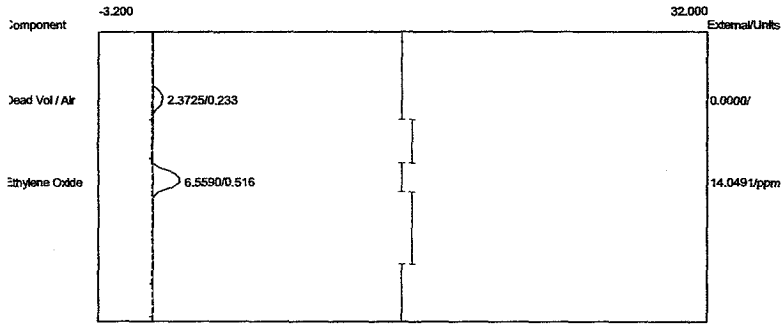
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2730	0.0000	
Ethylene Oxide	0.516	7.0410	15.0815	ppm
		9.3140	15.0815	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:10:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A17.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



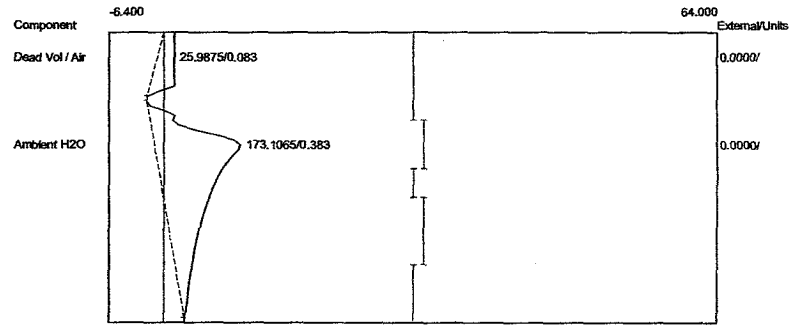
Component	Retention	Area	External	Units
Ambient H2O	0.383	177.8930	0.0000	
		177.8930	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:15:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A19.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



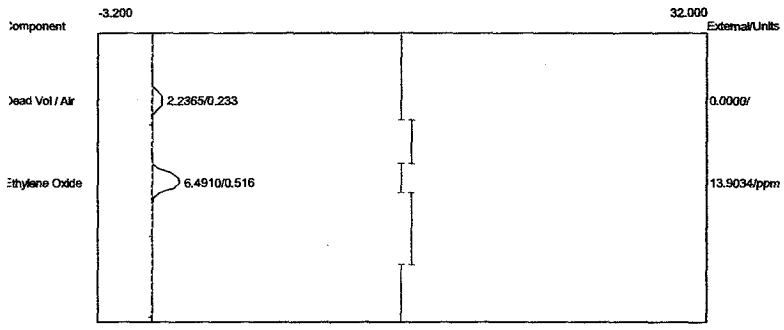
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3725	0.0000	
Ethylene Oxide	0.516	6.5590	14.0491	ppm
		8.9315	14.0491	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:15:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A19.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



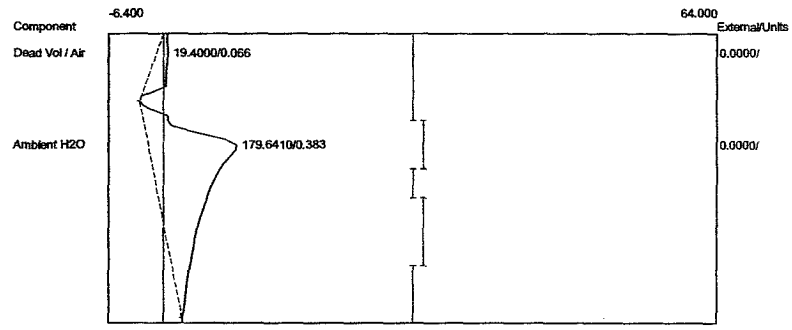
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	25.9875	0.0000	
Ambient H2O	0.383	173.1065	0.0000	
		199.0940	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:20:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A21.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



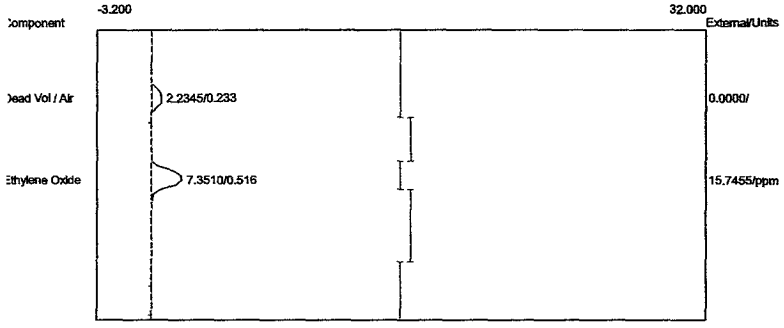
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2365	0.0000	
Ethylene Oxide	0.516	6.4910	13.9034	ppm
		8.7275	13.9034	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:20:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A21.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



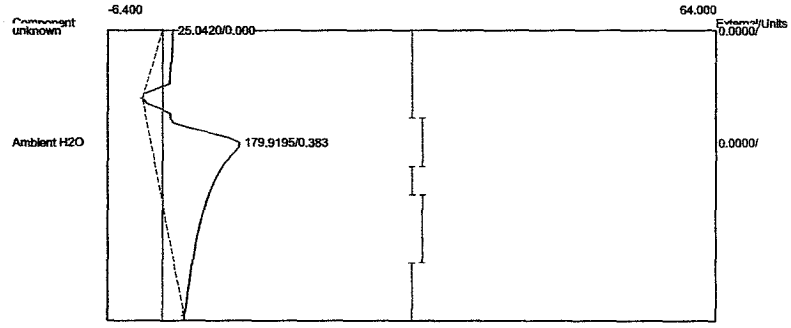
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	19.4000	0.0000	
Ambient H2O	0.383	179.6410	0.0000	
		199.0410	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:25:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A23.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



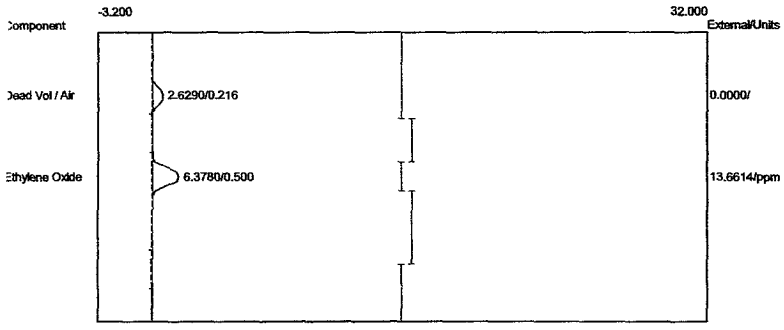
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2345	0.0000	
Ethylene Oxide	0.516	7.3510	15.7455	ppm
		9.5855	15.7455	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:25:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A23.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



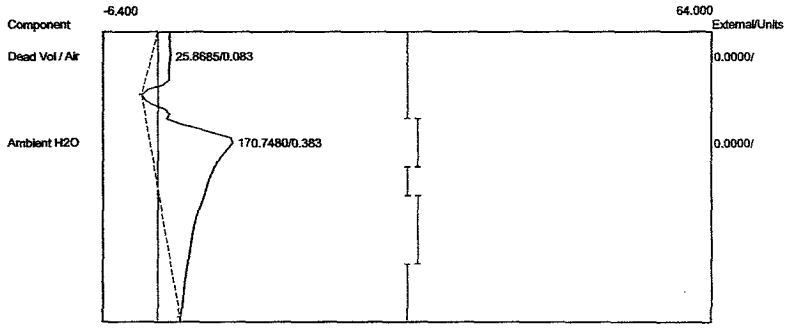
Component	Retention	Area	External	Units
Ambient H2O	0.383	179.9195	0.0000	
		179.9195	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:32:17
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A02.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



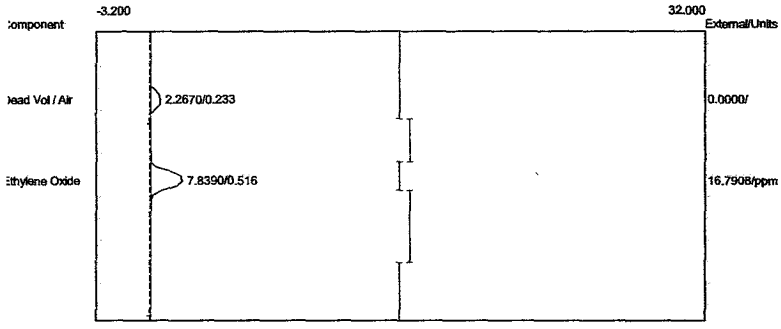
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.6290	0.0000	
Ethylene Oxide	0.500	6.3780	13.6614	ppm
		9.0070	13.6614	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:32:17
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A02.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



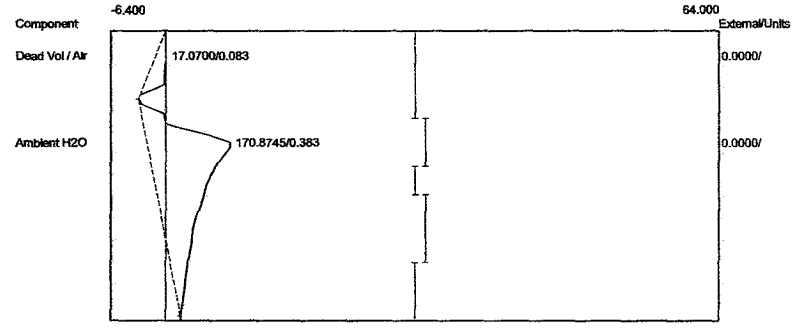
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	25.8685	0.0000	
Ambient H2O	0.383	170.7480	0.0000	
		196.6165	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:37:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A04.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



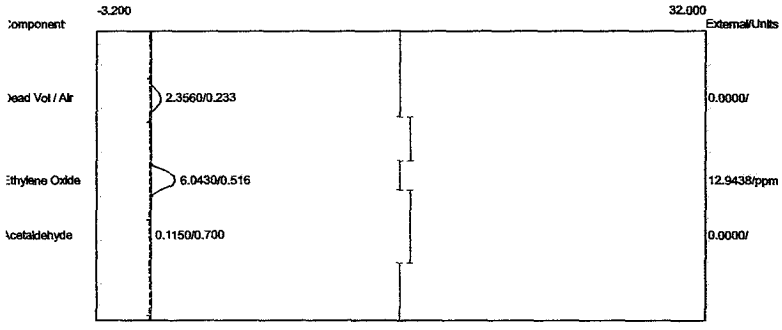
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2670	0.0000	
Ethylene Oxide	0.516	7.8390	16.7908	ppm
		10.1060	16.7908	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:37:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A04.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



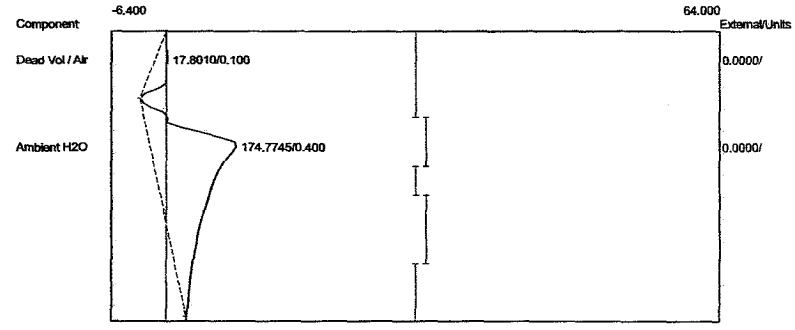
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	17.0700	0.0000	
Ambient H2O	0.383	170.8745	0.0000	
		187.9445	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:42:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A06.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



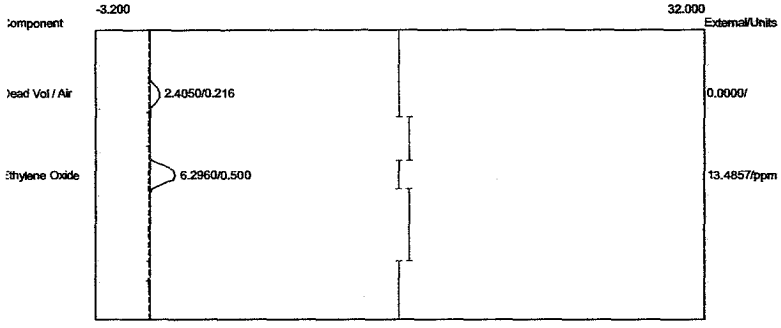
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3560	0.0000	
Ethylene Oxide	0.516	6.0430	12.9438	ppm
Acetaldehyde	0.700	0.1150	0.0000	
		8.5140	12.9438	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:42:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A06.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



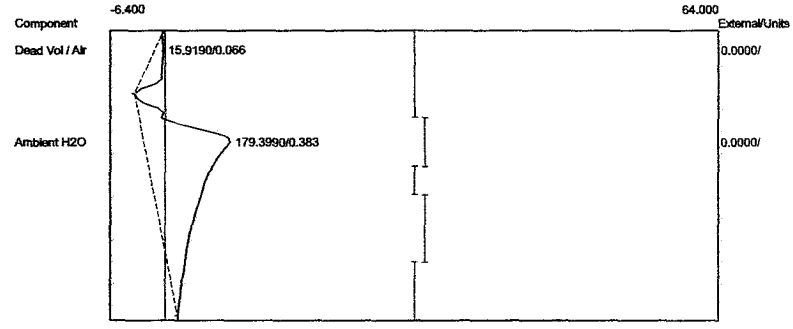
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	17.8010	0.0000	
Ambient H2O	0.400	174.7745	0.0000	
		192.5755	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:47:16
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A08.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



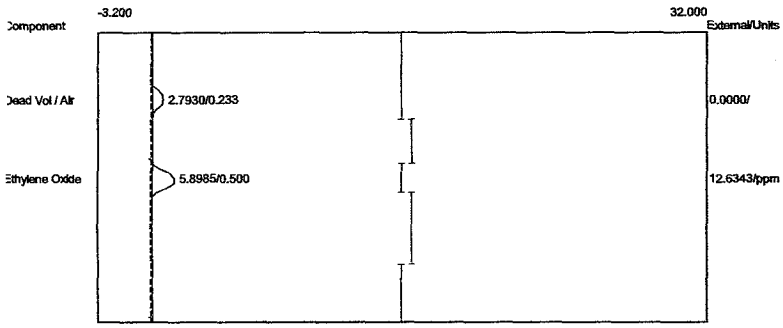
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4050	0.0000	
Ethylene Oxide	0.500	6.2960	13.4857	ppm
		8.7010	13.4857	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:47:16
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A08.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



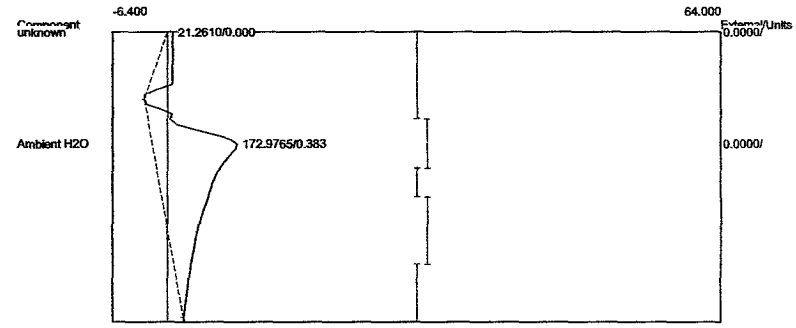
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	15.9190	0.0000	
Ambient H2O	0.383	179.3990	0.0000	
		195.3180	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:52:40
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A10.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



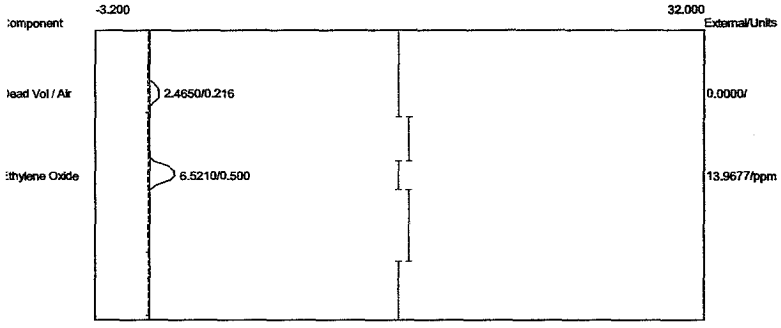
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.7930	0.0000	
Ethylene Oxide	0.500	5.8985	12.6343	ppm
		8.6915	12.6343	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:52:40
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A10.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



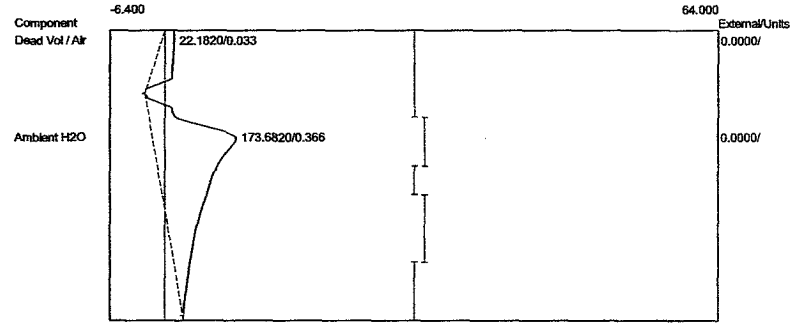
Component	Retention	Area	External	Units
Ambient H2O	0.383	172.9765	0.0000	
		172.9765	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:57:26
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A12.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



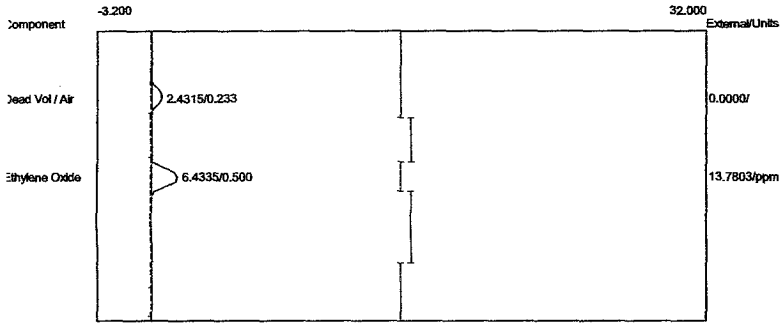
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4650	0.0000	
Ethylene Oxide	0.500	6.5210	13.9677	ppm
		8.9860	13.9677	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 11:57:26
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A12.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



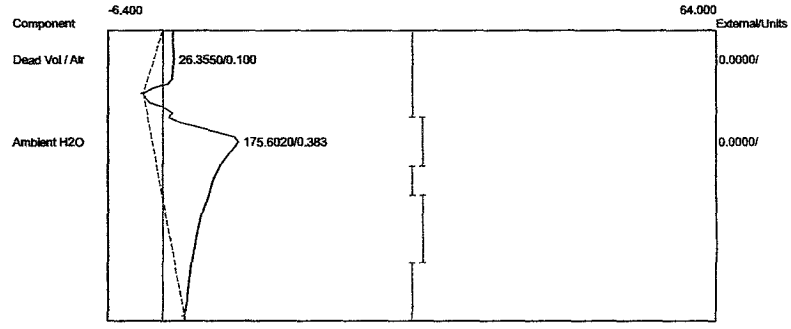
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	22.1820	0.0000	
Ambient H2O	0.366	173.6820	0.0000	
		195.8640	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:02:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A14.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



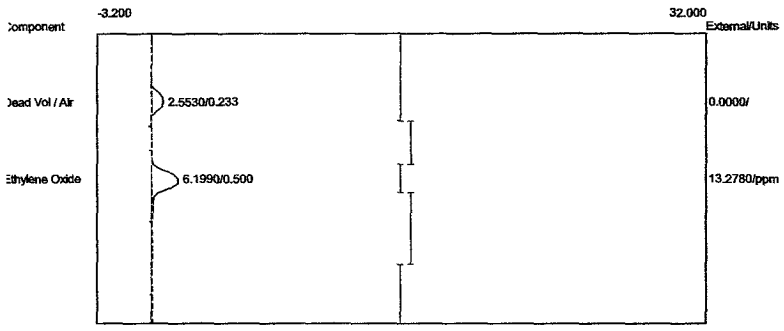
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.4315	0.0000	
Ethylene Oxide	0.500	6.4335	13.7803	ppm
		8.8650	13.7803	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:02:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A14.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



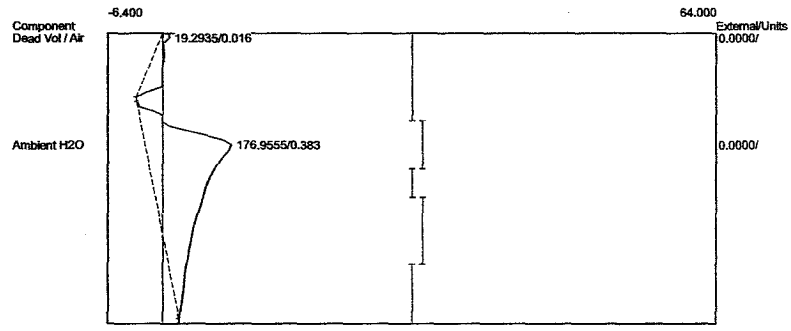
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	26.3550	0.0000	
Ambient H2O	0.383	175.6020	0.0000	
		201.9570	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:07:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A16.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



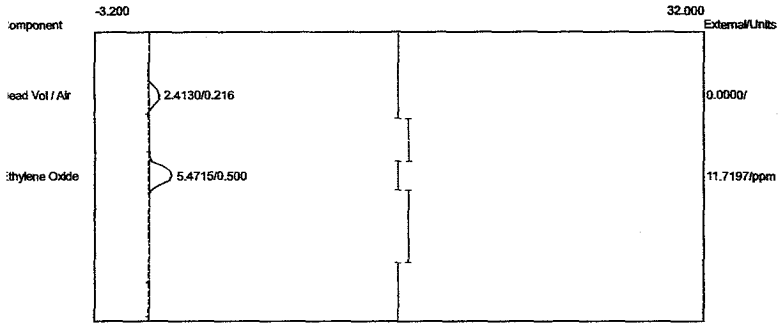
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.5530	0.0000	
Ethylene Oxide	0.500	6.1990	13.2780	ppm
		8.7520	13.2780	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:07:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A16.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



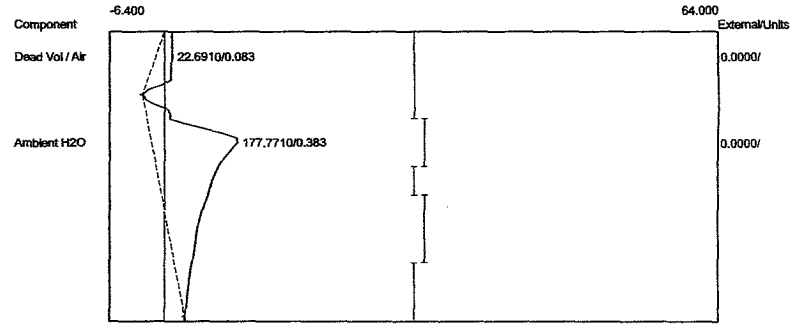
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	19.2935	0.0000	
Ambient H2O	0.383	176.9555	0.0000	
		196.2490	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:12:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A18.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



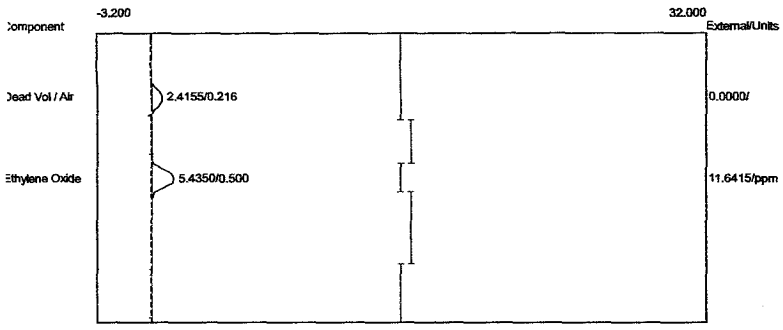
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4130	0.0000	
Ethylene Oxide	0.500	5.4715	11.7197	ppm
		7.8845	11.7197	

Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:12:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A18.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



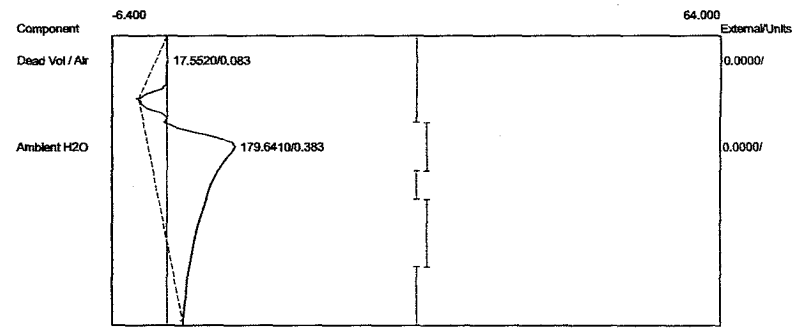
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	22.6910	0.0000	
Ambient H2O	0.383	177.7710	0.0000	
		200.4620	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:17:08
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A20.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



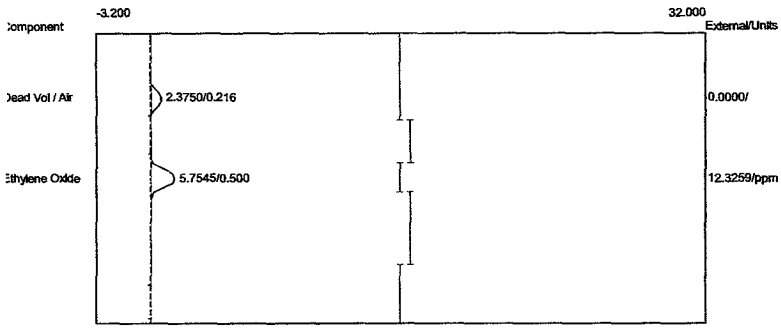
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4155	0.0000	
Ethylene Oxide	0.500	5.4350	11.6415	ppm
		7.8505	11.6415	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:17:08
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A20.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



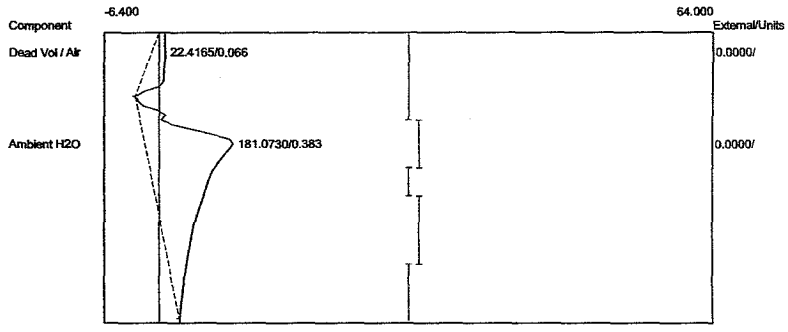
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	17.5520	0.0000	
Ambient H2O	0.383	179.6410	0.0000	
		197.1930	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:22:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A22.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



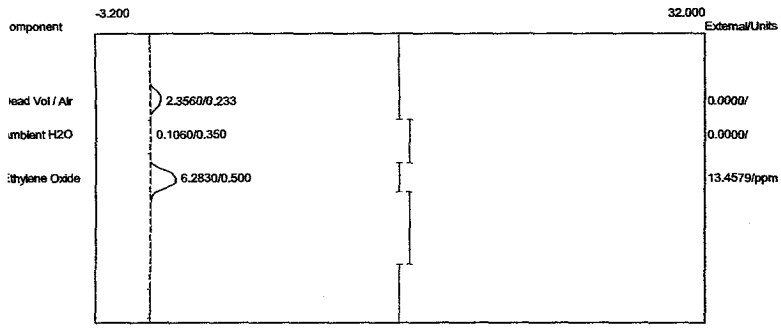
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3750	0.0000	
Ethylene Oxide	0.500	5.7545	12.3259	ppm
		8.1295	12.3259	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:22:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A22.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



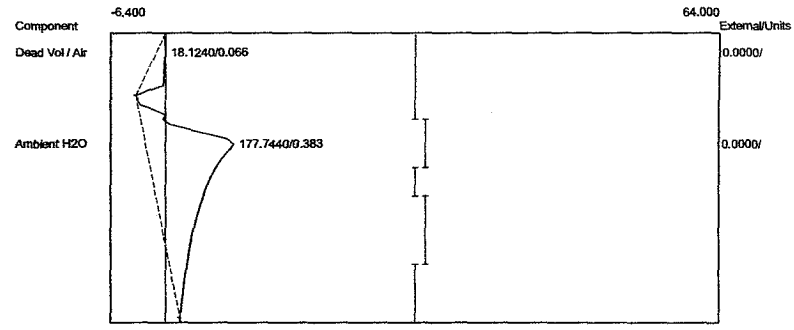
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	22.4165	0.0000	
Ambient H2O	0.383	181.0730	0.0000	
		203.4895	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:27:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-2A24.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



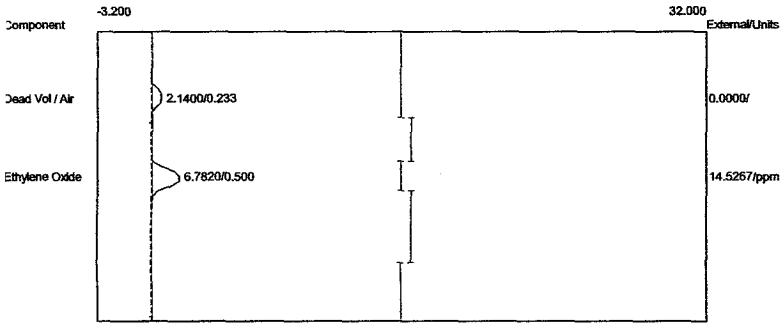
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3560	0.0000	
Ambient H2O	0.350	0.1060	0.0000	
Ethylene Oxide	0.500	6.2830	13.4579	ppm
		8.7450	13.4579	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#2Aer
Analysis date: 11/17/2017 12:27:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-2A24.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



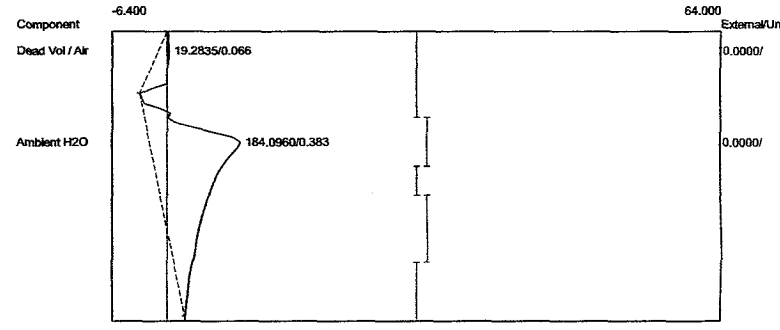
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	18.1240	0.0000	
Ambient H2O	0.383	177.7440	0.0000	
		195.8680	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:30:17
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A01.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



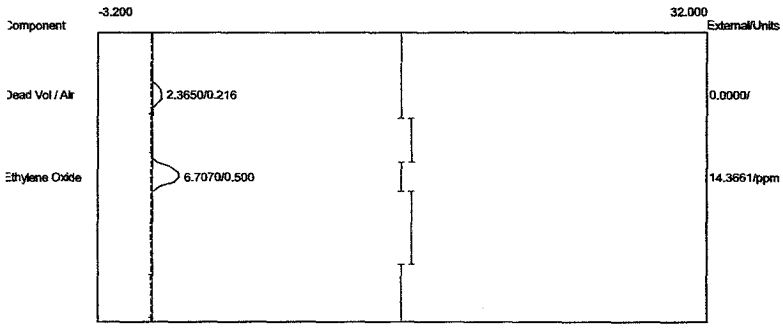
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.1400	0.0000	
Ethylene Oxide	0.500	6.7820	14.5267	ppm
		8.9220	14.5267	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:30:17
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A01.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



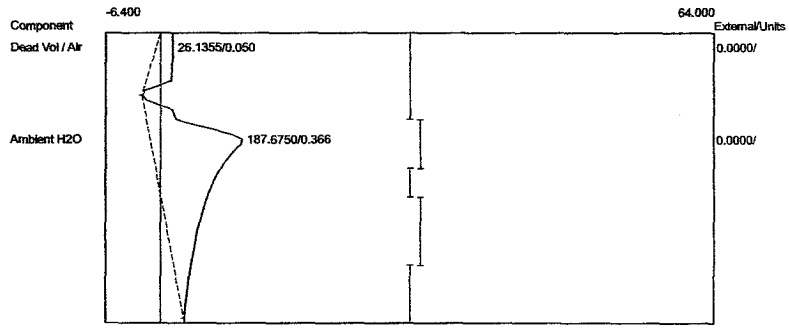
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	19.2835	0.0000	
Ambient H2O	0.383	184.0960	0.0000	
		203.3795	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:35:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A03.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



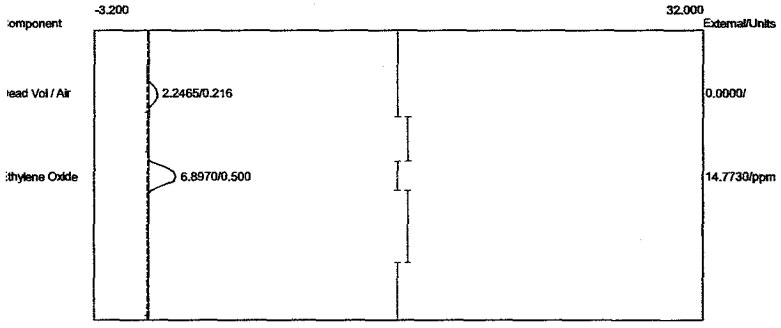
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3650	0.0000	
Ethylene Oxide	0.500	6.7070	14.3661	ppm
		9.0720	14.3661	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:35:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A03.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



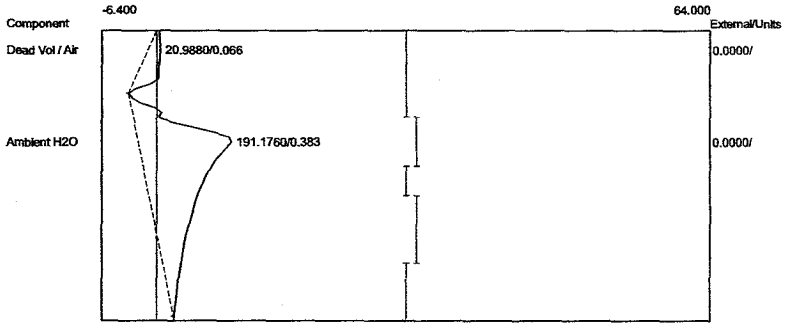
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	26.1355	0.0000	
Ambient H2O	0.366	187.6750	0.0000	
		213.8105	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:40:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A05.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



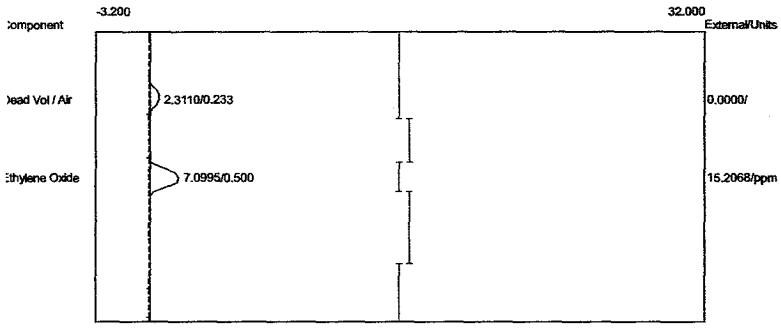
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.2465	0.0000	
Ethylene Oxide	0.500	6.8970	14.7730	ppm
		9.1435	14.7730	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:40:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A05.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



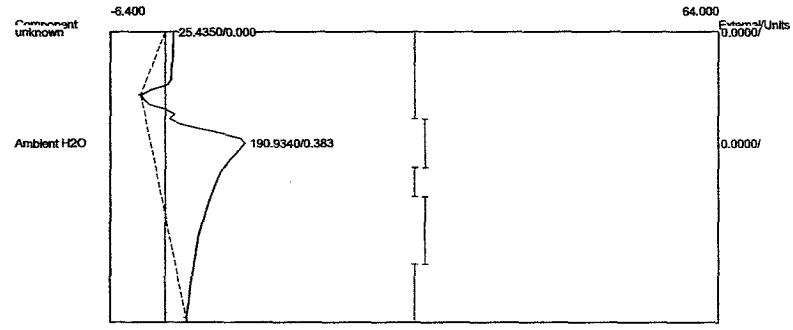
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	20.9880	0.0000	
Ambient H2O	0.383	191.1760	0.0000	
		212.1640	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:45:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A07.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



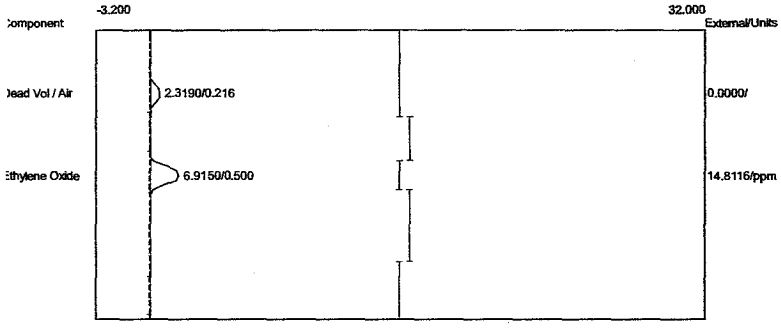
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3110	0.0000	
Ethylene Oxide	0.500	7.0995	15.2068	ppm
		9.4105	15.2068	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:45:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A07.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



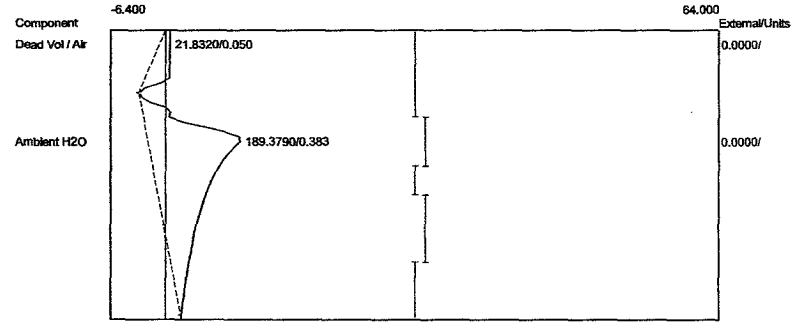
Component	Retention	Area	External	Units
Ambient H2O	0.383	190.9340	0.0000	
		190.9340	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:50:25
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A09.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



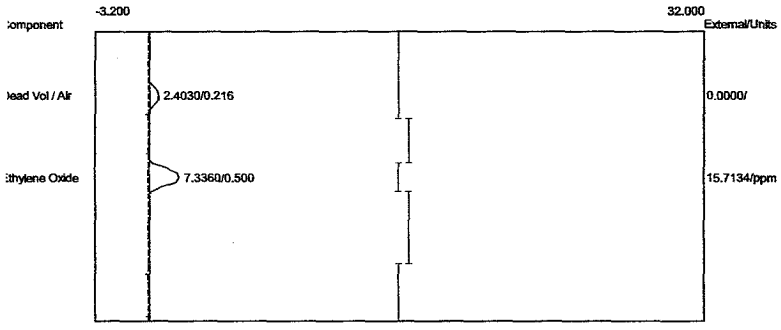
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3190	0.0000	
Ethylene Oxide	0.500	6.9150	14.8116	ppm
		9.2340	14.8116	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:50:25
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A09.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



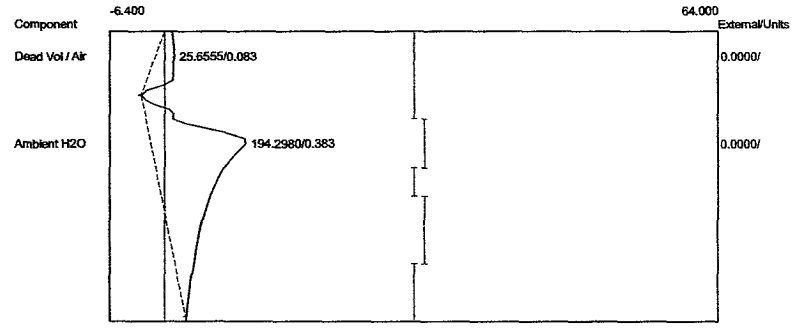
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	21.8320	0.0000	
Ambient H2O	0.383	189.3790	0.0000	
		211.2110	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:55:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A11.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



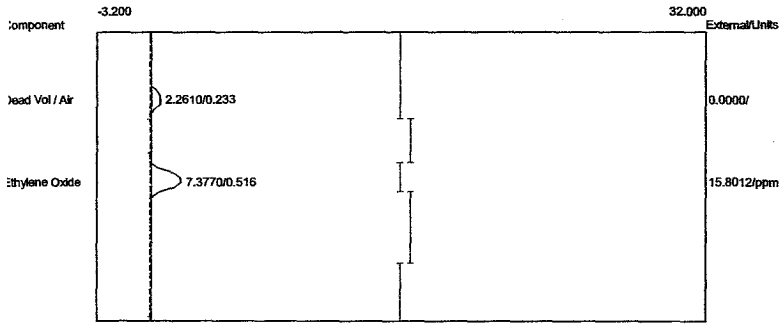
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4030	0.0000	
Ethylene Oxide	0.500	7.3360	15.7134	ppm
		9.7390	15.7134	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:55:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A11.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



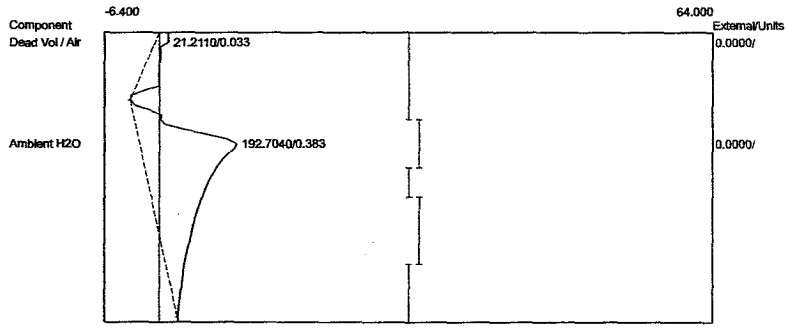
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	25.6555	0.0000	
Ambient H2O	0.383	194.2980	0.0000	
		219.9535	0.0000	

Lab name: ESSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:00:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A13.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



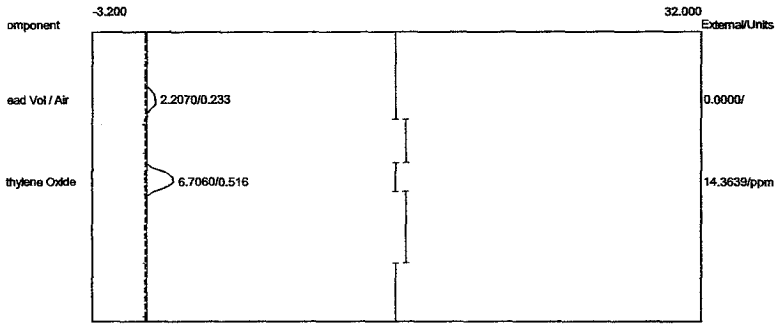
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2610	0.0000	
Ethylene Oxide	0.516	7.3770	15.8012	ppm
		9.6380	15.8012	

Lab name: ESSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:00:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A13.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



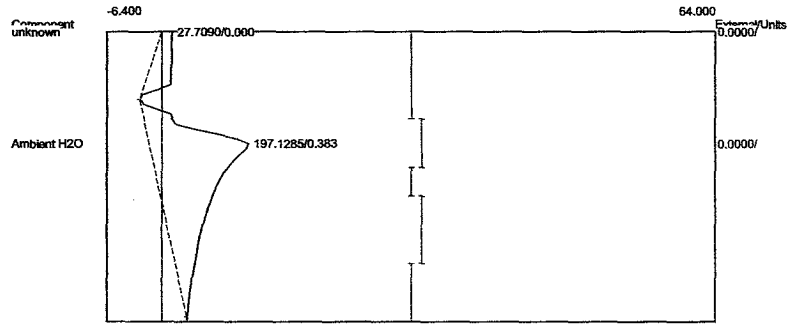
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	21.2110	0.0000	
Ambient H2O	0.383	192.7040	0.0000	
		213.9150	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:05:23
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A15.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



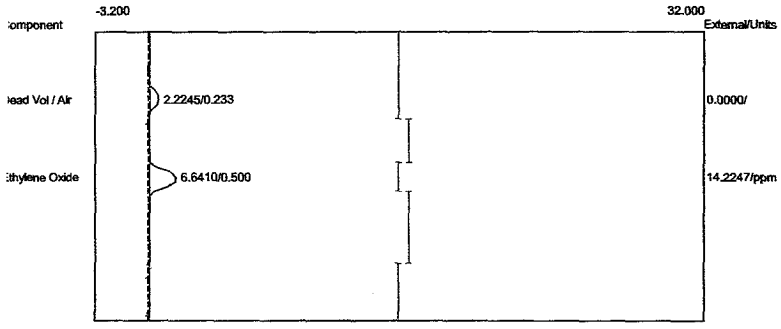
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2070	0.0000	
Ethylene Oxide	0.516	6.7060	14.3639	ppm
		8.9130	14.3639	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:05:23
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A15.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



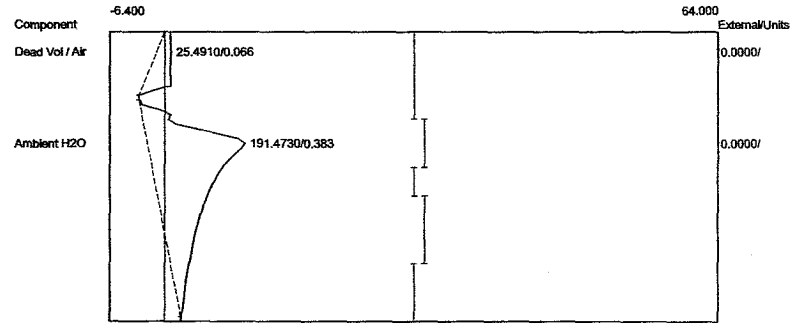
Component	Retention	Area	External	Units
Ambient H2O	0.383	197.1285	0.0000	
		197.1285	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:10:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A17.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



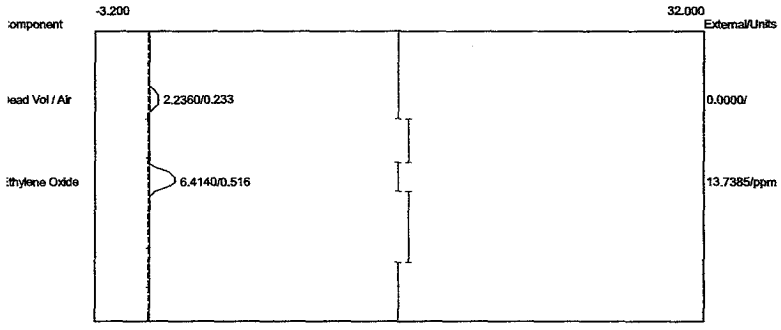
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2245	0.0000	
Ethylene Oxide	0.500	6.6410	14.2247	ppm
		8.8655	14.2247	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:10:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A17.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



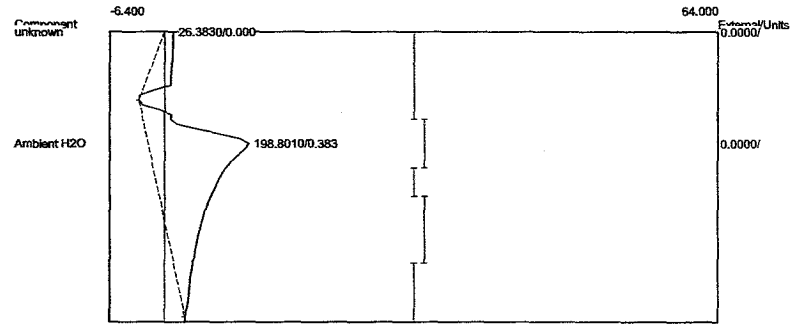
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	25.4910	0.0000	
Ambient H2O	0.383	191.4730	0.0000	
		216.9640	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:15:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A19.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



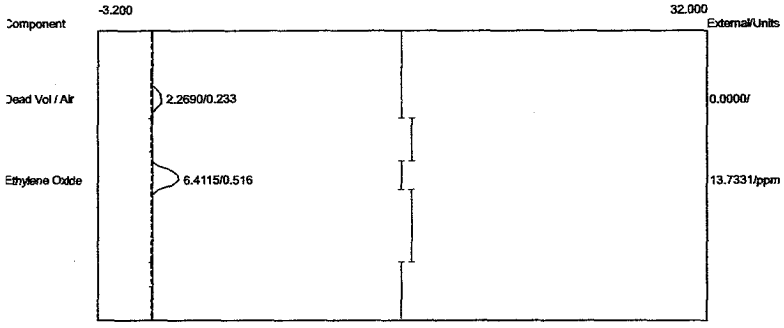
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2360	0.0000	
Ethylene Oxide	0.516	6.4140	13.7385	ppm
		8.6500	13.7385	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:15:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A19.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



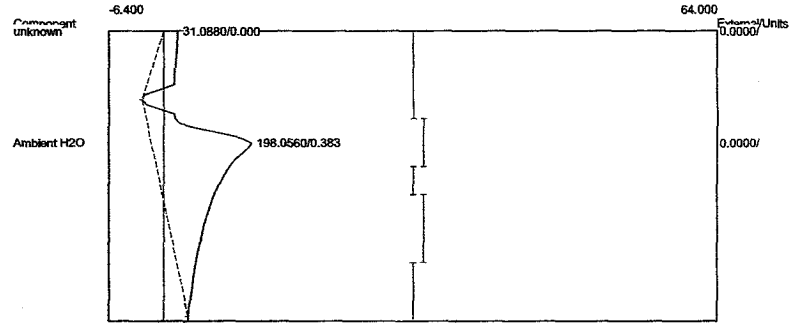
Component	Retention	Area	External	Units
Ambient H2O	0.383	198.8010	0.0000	
		198.8010	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:20:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A21.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



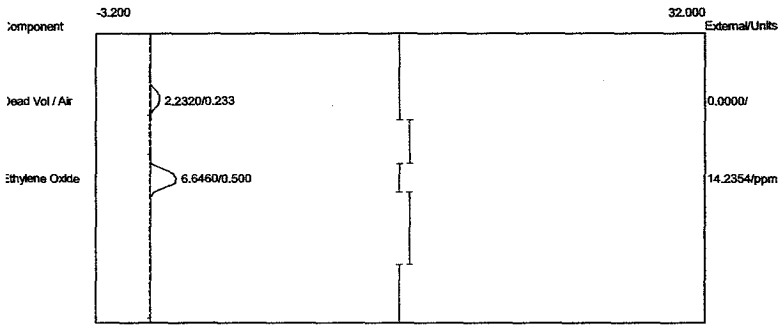
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2690	0.0000	
Ethylene Oxide	0.516	6.4115	13.7331	ppm
		8.6805	13.7331	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:20:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A21.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



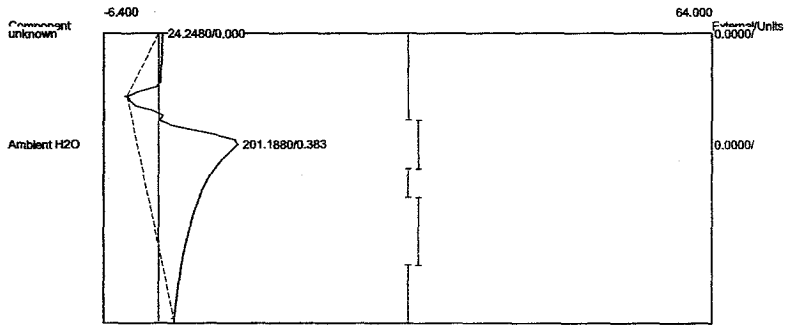
Component	Retention	Area	External	Units
Ambient H2O	0.383	198.0560	0.0000	
		198.0560	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:25:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A23.CHR (c:\peak359)
Sample: Oxidizer #1 Inlet
Operator: D. Kremer



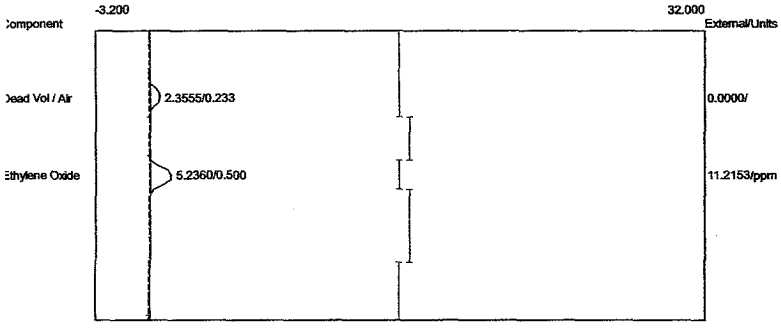
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2320	0.0000	
Ethylene Oxide	0.500	6.6460	14.2354	ppm
		8.8780	14.2354	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:25:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A23.CHR (c:\peak359)
Sample: Oxidizer #1 Outlet
Operator: D. Kremer



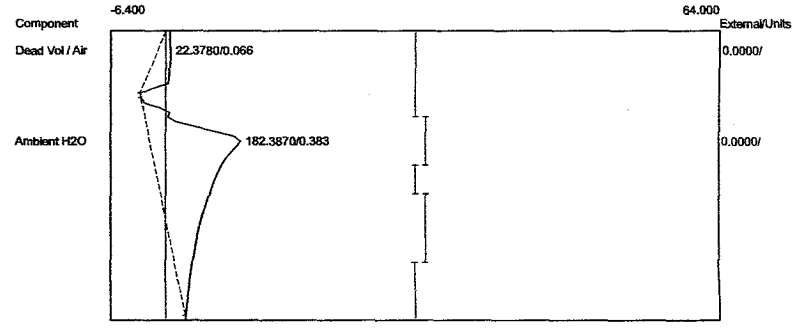
Component	Retention	Area	External	Units
Ambient H2O	0.383	201.1880	0.0000	
		201.1880	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:32:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A02.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



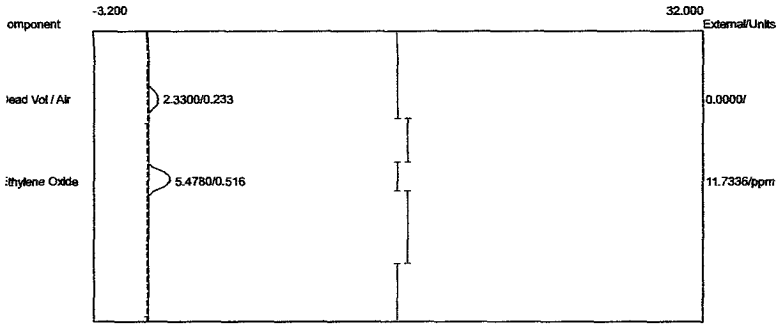
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3555	0.0000	
Ethylene Oxide	0.500	5.2360	11.2153	ppm
		7.5915	11.2153	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:32:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A02.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



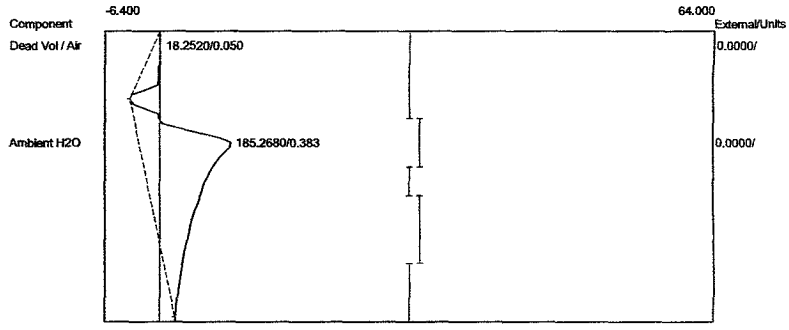
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	22.3780	0.0000	
Ambient H2O	0.383	182.3870	0.0000	
		204.7650	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:37:11
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A04.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



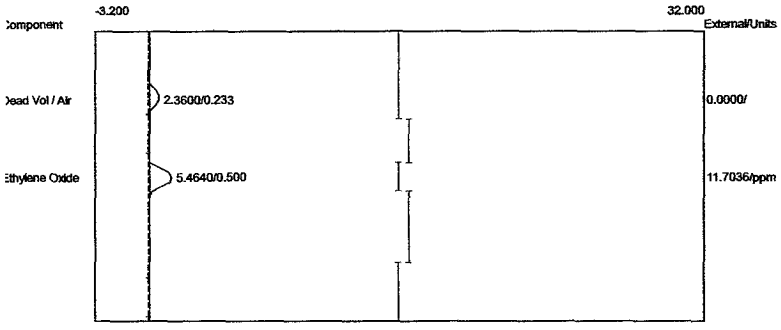
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3300	0.0000	
Ethylene Oxide	0.516	5.4780	11.7336	ppm
		7.8080	11.7336	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:37:11
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A04.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



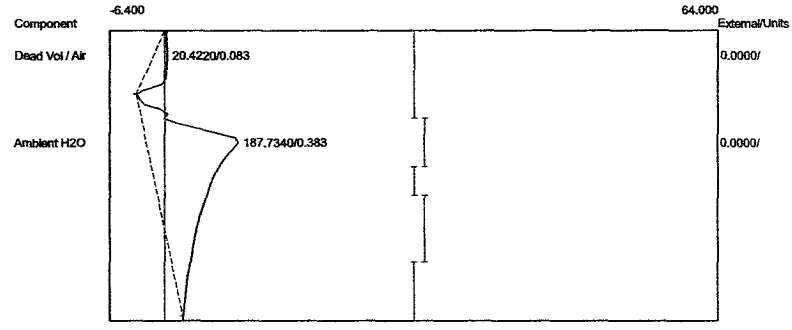
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	18.2520	0.0000	
Ambient H2O	0.383	185.2680	0.0000	
		203.5200	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:42:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A06.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3600	0.0000	
Ethylene Oxide	0.500	5.4640	11.7036	ppm
		7.8240	11.7036	

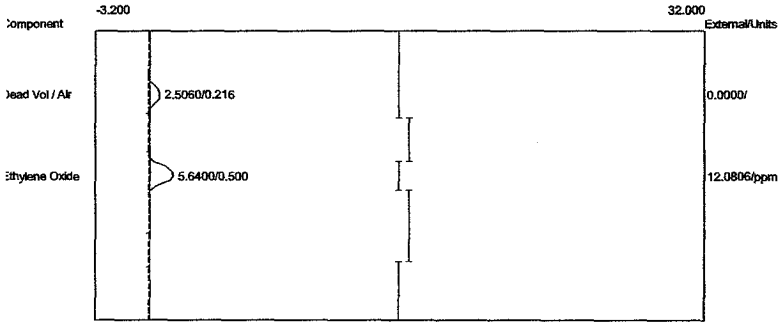
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:42:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A06.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.083	20.4220	0.0000	
Ambient H2O	0.383	187.7340	0.0000	
		208.1560	0.0000	

Lab name: ESC

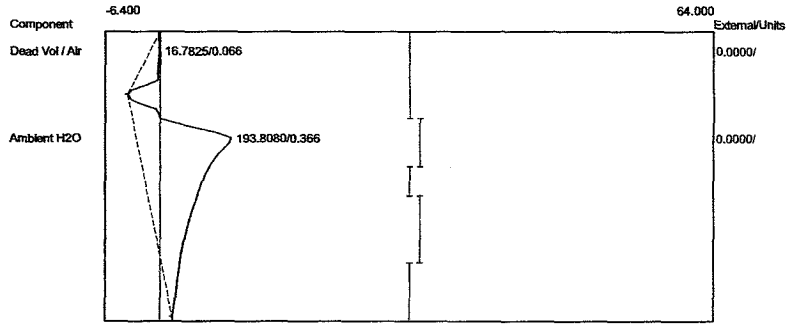
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:47:01
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A08.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.5060	0.0000	
Ethylene Oxide	0.500	5.6400	12.0806	ppm
		8.1460	12.0806	

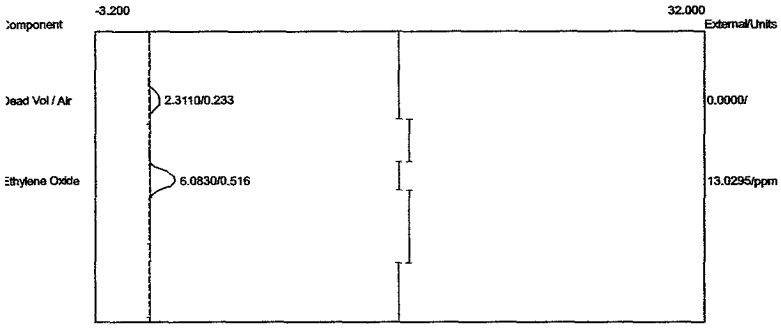
Lab name: ESC

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:47:01
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A08.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



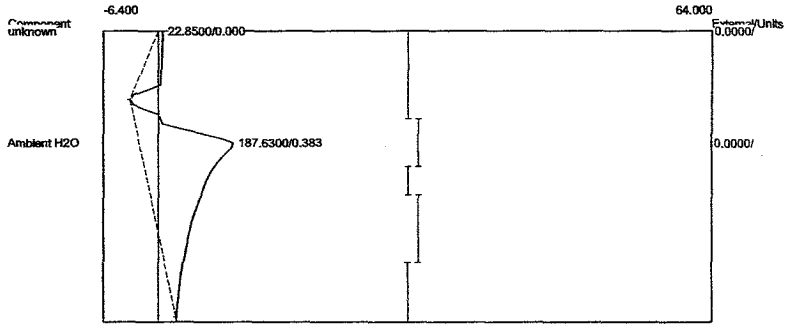
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	16.7825	0.0000	
Ambient H2O	0.366	193.8080	0.0000	
		210.5905	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:52:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A10.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



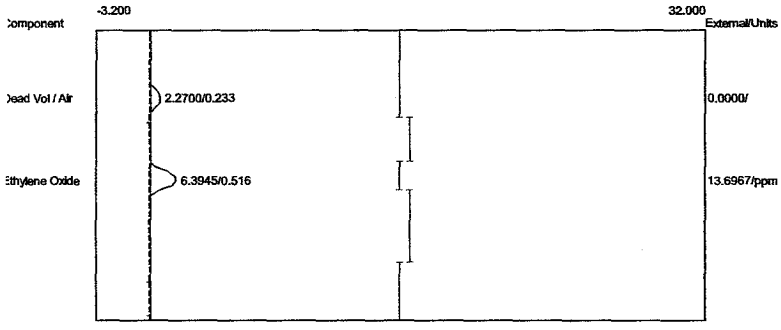
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3110	0.0000	
Ethylene Oxide	0.516	6.0830	13.0295	ppm
		8.3940	13.0295	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:52:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A10.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



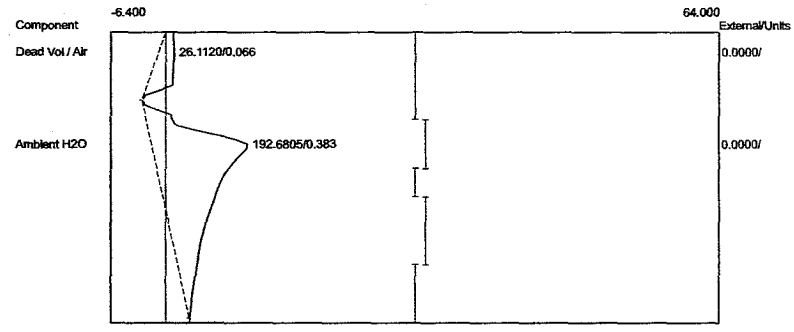
Component	Retention	Area	External	Units
Ambient H2O	0.383	187.6300	0.0000	
		187.6300	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:57:06
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A12.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



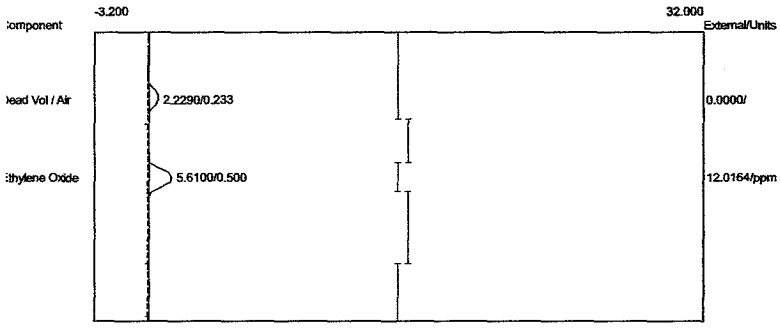
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2700	0.0000	
Ethylene Oxide	0.516	6.3945	13.6967	ppm
		8.6645	13.6967	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 12:57:06
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A12.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



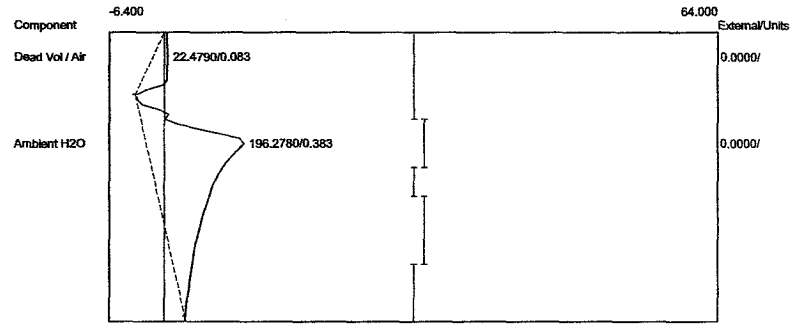
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	26.1120	0.0000	
Ambient H2O	0.383	192.6805	0.0000	
		218.7925	0.0000	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:02:40
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A14.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



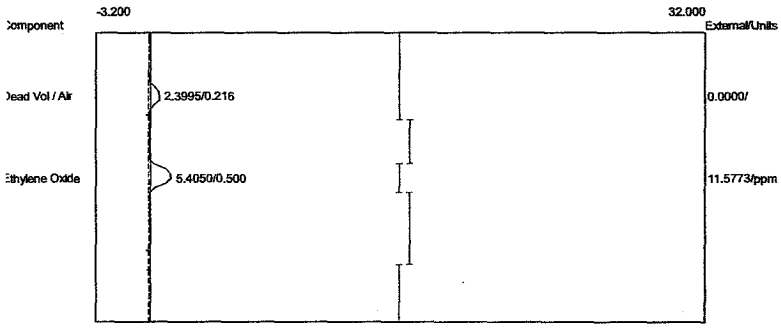
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.2290	0.0000	
Ethylene Oxide	0.500	5.6100	12.0164	ppm
		7.8390	12.0164	

Lab name: EOSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:02:40
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A14.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



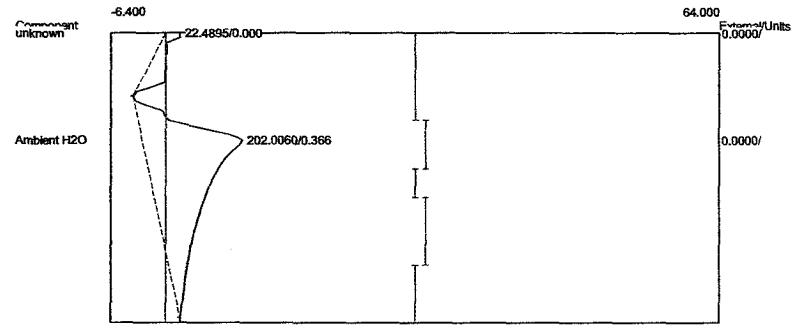
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	22.4790	0.0000	
Ambient H2O	0.383	196.2780	0.0000	
		218.7570	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:07:08
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A16.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



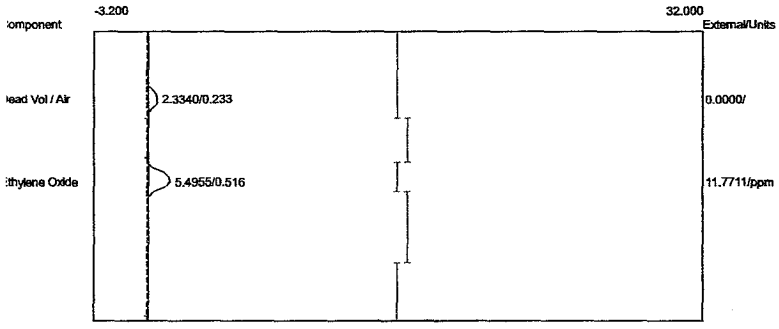
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.3995	0.0000	
Ethylene Oxide	0.500	5.4050	11.5773	ppm
		7.8045	11.5773	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:07:08
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A16.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



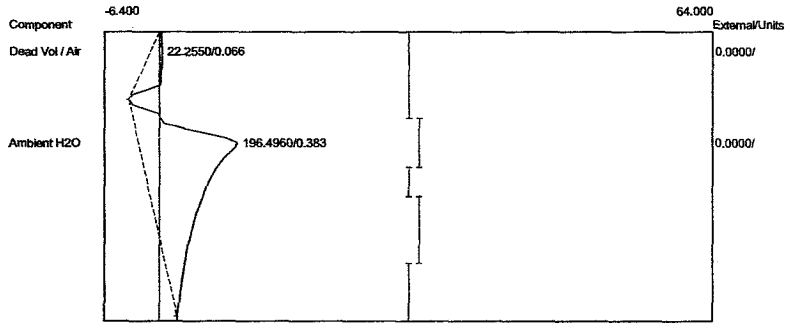
Component	Retention	Area	External	Units
Ambient H2O	0.366	202.0060	0.0000	
		202.0060	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:12:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A18.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



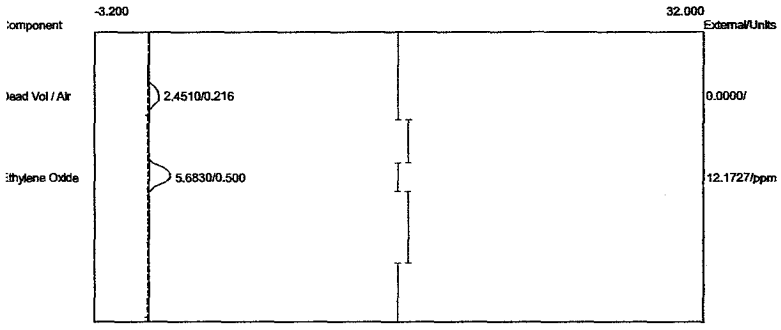
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.3340	0.0000	
Ethylene Oxide	0.516	5.4955	11.7711	ppm
		7.8295	11.7711	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:12:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A18.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



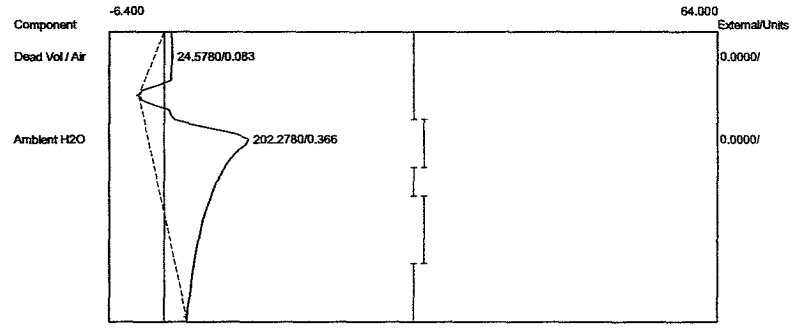
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	22.2550	0.0000	
Ambient H2O	0.383	196.4960	0.0000	
		218.7510	0.0000	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:17:06
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A20.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



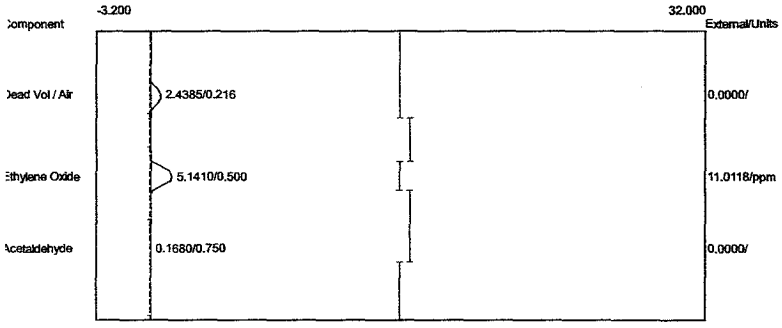
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4510	0.0000	
Ethylene Oxide	0.500	5.6830	12.1727	ppm
		8.1340	12.1727	

Lab name: ECSI
Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:17:06
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A20.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



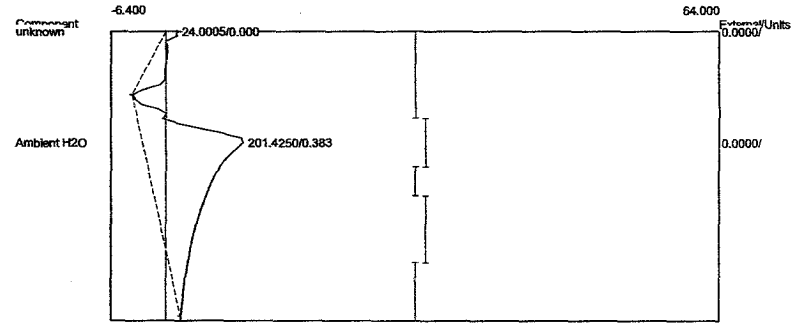
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	24.5780	0.0000	
Ambient H2O	0.366	202.2780	0.0000	
		226.8560	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:22:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A22.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



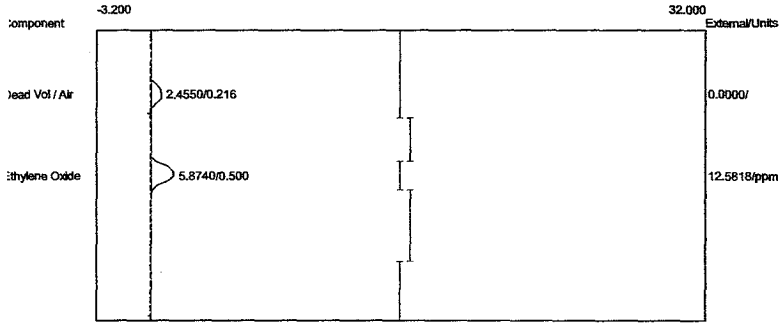
Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4385	0.0000	
Ethylene Oxide	0.500	5.1410	11.0118	ppm
Acetaldehyde	0.750	0.1680	0.0000	
		7.7475	11.0118	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:22:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A22.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



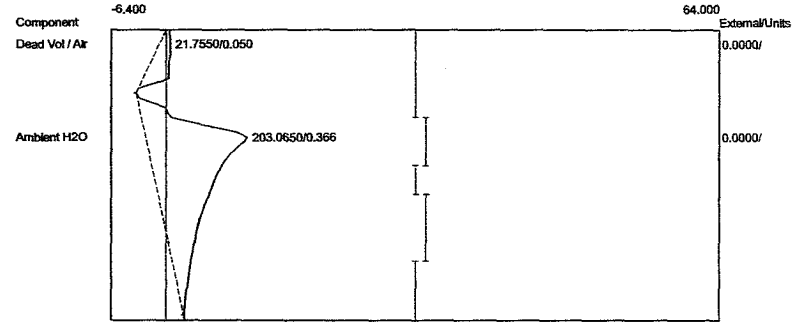
Component	Retention	Area	External	Units
Ambient H2O	0.383	201.4250	0.0000	
		201.4250	0.0000	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:27:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterOnt2017-3A24.CHR (c:\peak359)
Sample: Oxidizer #2 Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.216	2.4550	0.0000	
Ethylene Oxide	0.500	5.8740	12.5818	ppm
		8.3290	12.5818	

Client: Sterigenics - Ontario
Client ID: Run#3Aer
Analysis date: 11/17/2017 13:27:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterOnt2017-3A24.CHR (c:\peak359)
Sample: Oxidizer #2 Outlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.050	21.7550	0.0000	
Ambient H2O	0.366	203.0650	0.0000	
		224.8200	0.0000	

APPENDIX D

Field Data and Calculation Worksheets

ECSi, Inc.

Ethylene Oxide Mass Emissions Data and Calculations

Sterigenics, Inc. - Ontario, California
11-17-17 - Backvent Test Data - Oxidizer #1

DeltaP	SqRtDeltaP	Stack Temp (F)	ppm EtO	Catalyst Temp			
					mw =	28.51	
					stack area =	15.9	
0.14	0.3742	210	0.01	293	**press =**	28.90	
0.14	0.3742	210	0.01	293	**Tstd =**	528	
0.14	0.3742	210	0.01	293	**Pstd =**	29.92	
0.14	0.3742	210	0.01	293	**Cp =**	0.99	
0.14	0.3742	210	0.01	293	**Kp =**	85.49	
0.14	0.3742	210	0.01	293			
0.14	0.3742	210	0.01	293	**Velocity =**	28.6	ft/sec
0.14	0.3742	210	0.01	293	**Flow =**	**20115**	**dscfm**
0.14	0.3742	210	0.01	293			
0.14	0.3742	210	0.01	293	**MWeto =**	44.05	
0.14	0.3742	210	0.01	293	**MolVol =**	385.32	
0.14	0.3742	210	0.01	293	**ppmv/ft3 =**	1000000	
Average =					**EtO Mass Flow =**	**0.0000230**	**lbs/min**
0.14	0.3742	210.0	0.0100	293.0	**EtO Mass Flow =**	**0.001380**	**lbs/hr**

= 670 degR

ECSi, Inc.

Ethylene Oxide Mass Emissions Data and Calculations

Sterigenics, Inc. - Ontario, California
11-17-17 - Backvent Test Data - Oxidizer #2

DeltaP	SqRtDeltaP	Stack Temp (F)	ppm EtO	Catalyst Temp			
					mw =	28.51	
					stack area =	7.07	
0.69	0.8307	180	0.01	301	**press =**	28.90	
0.69	0.8307	180	0.01	301	**Tstd =**	528	
0.69	0.8307	180	0.01	301	**Pstd =**	29.92	
0.69	0.8307	180	0.01	302	**Cp =**	0.99	
0.69	0.8307	180	0.01	302	**Kp =**	85.49	
0.69	0.8307	180	0.01	302			
0.69	0.8307	180	0.01	302	**Velocity =**	62.0	ft/sec
0.69	0.8307	180	0.01	302	**Flow =**	**20311**	**dscfm**
0.69	0.8307	181	0.01	302			
0.69	0.8307	181	0.01	302	**MWeto =**	44.05	
0.69	0.8307	181	0.01	302	**MolVol =**	385.32	
0.69	0.8307	181	0.01	302	**ppmv/ft3 =**	1000000	
Average =					**EtO Mass Flow =**	**0.0000232**	**lbs/min**
0.69	0.8307	180.3	0.0100	301.8	**EtO Mass Flow =**	**0.001393**	**lbs/hr**

= 640 degR

ECSi, Inc.

Ethylene Oxide Mass Emissions Data and Calculations

Sterigenics, Inc. - Ontario, California
11-17-17 - Aeration Test Data - Oxidizer #1

DeltaP	SqRtDeltaP	Stack Temp (F)	ppm EtO	Catalyst Temp
Run#1				
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
Run#2				
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	294
0.14	0.3742	213	0.01	294
0.14	0.3742	213	0.01	294
0.14	0.3742	213	0.01	294
0.14	0.3742	213	0.01	294
0.14	0.3742	213	0.01	294
0.14	0.3742	213	0.01	294
0.14	0.3742	213	0.01	294
0.14	0.3742	213	0.01	294
0.14	0.3742	212	0.01	293
Run#3				
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	213	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
0.14	0.3742	212	0.01	293
Average =				
0.14	0.3742	212.3	0.0100	293.3
		= 672	degR	

mw =	28.51	
stack area =	15.9	
press =	28.90	
Tstd =	528	
Pstd =	29.92	
Cp =	0.99	
Kp =	85.49	
Velocity =	28.6	ft/sec
Flow =	**20081**	**dscfm**
MWeto =	44.05	
MolVol =	385.32	
ppmv/ft3 =	1000000	
EtO Mass Flow =	**0.0000230**	**lbs/min**
EtO Mass Flow =	**0.001377**	**lbs/hr**

ECSi, Inc.

Ethylene Oxide Mass Emissions Data and Calculations

Sterigenics, Inc. - Ontario, California
11-17-17 - Aeration Test Data - Oxidizer #2

DeltaP	SqRtDeltaP	Stack Temp (F)	ppm EtO	Catalyst Temp
Run#1				
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	182	0.01	302
0.69	0.8307	182	0.01	302
0.69	0.8307	182	0.01	302
0.69	0.8307	182	0.01	302
0.69	0.8307	181	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	179	0.01	301
Run#2				
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	182	0.01	302
0.69	0.8307	182	0.01	302
0.69	0.8307	182	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	181	0.01	302
0.69	0.8307	180	0.01	301
Run#3				
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	181	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
0.69	0.8307	180	0.01	301
Average =				
0.69	0.8307	180.8	0.0100	301.6
		= 641	degR	

mw =	28.51	
stack area =	7.07	
press =	28.90	
Tstd =	528	
Pstd =	29.92	
Cp =	0.99	
Kp =	85.49	
Velocity =	62.0	ft/sec
Flow =	**20304**	**dscfm**
MWeto =	44.05	
MolVol =	385.32	
ppmv/ft3 =	1000000	
EtO Mass Flow =	**0.0000232**	**lbs/min**
EtO Mass Flow =	**0.001393**	**lbs/hr**

ETHYLENE OXIDE SOURCE TEST/CALIBRATION DATA

Client: Sterigenics - Ontario, CA

Source Tested: 2 catalytic oxidizers Date: 11/17/17

PRE CALIBRATION

	Calibration Gas Conc. (ppmv)	1.10 ppm EtO	10.1 ppm EtO	100 ppm EtO	1000 ppm EtO	10080 ppm EtO			
Inlet (FID)	Area Counts #1	.509	4.99	46.8					
	Area Counts #2	.494	4.65	46.6					
	Average Area	.502	4.82	46.7					
	Audit Standard (48.8 ppmv) Result					49.3 ✓			
Outlet (PID)	Calibration Gas Conc. (ppmv)	1.10 ppm EtO	10.1 ppm EtO	100 ppm EtO					
	Area Counts #1	2.13	19.7	171					
	Area Counts #2	2.18	19.3	172					
	Average Area	2.16	19.5	172					
	Audit Standard (48.8 ppmv) Result					49.8 ✓			

	Run #1	Run #2	Run #3	BV			
Oxidizer 1 start/stop:	1028 / 1128	1128 / 1228	1228 / 1328	940 / 955	P_{bar}:	28.90	EtO Usage (lbs/yr): —
Oxidizer 2 start/stop:	1030 / 1130	1130 / 1230	1330 / 1330	1005 / 1020	%H_2O:	3	Cycles Per Week: —

POST CALIBRATION

	Calibration Gas Conc. (ppmv)	1.10 ppm EtO	10.1 ppm EtO	100 ppm EtO	1000 ppm EtO	10080 ppm EtO			
Inlet (FID)	Area Counts #1								
	Area Counts #2								
	Average Area								
	Audit Standard (48.8 ppmv) Result					48.5 ✓			
Outlet (PID)	Calibration Gas Conc. (ppmv)	1.10 ppm EtO	10.1 ppm EtO	100 ppm EtO					
	Area Counts #1								
	Area Counts #2								
	Average Area								
	Audit Standard (48.8 ppmv) Result					48.2 ✓			

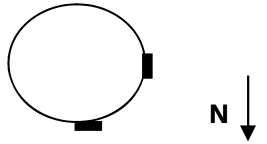
ECSi

ECSI, INC. - VELOCITY TRAVERSE DATA

Client: Sterigenics | Run #: 1 | Date: 11/16/2017 | Port Sketch:

Location: Ontario, CA | Probe Type: Std. | Baro Press: 28.90

Source: Oxidizer #1 Outlet | Stack I.D.: 54 in. | DSCFM: **20,000**



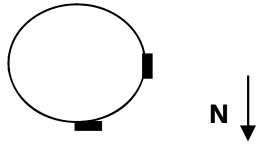
	Port 1							Port 2						
Inches From Port	Point#	Delta P Low	Delta P High	Delta P Average	Delta P Sq Root	Stack Temp (F)	Cyclonic Angle	Point#	Delta P Low	Delta P High	Delta P Average	Delta P Sq Root	Stack Temp (F)	Cyclonic Angle
1.1	1	0.13	0.13	0.13	0.3606	212	0	1	0.13	0.13	0.13	0.3606	212	0
3.6	2	0.13	0.14	0.135	0.3674	212	0	2	0.13	0.14	0.135	0.3674	212	0
6.3	3	0.13	0.14	0.135	0.3674	212	0	3	0.14	0.14	0.14	0.3742	212	0
9.5	4	0.14	0.14	0.14	0.3742	212	0	4	0.14	0.14	0.14	0.3742	212	0
13.5	5	0.14	0.14	0.14	0.3742	212	0	5	0.14	0.14	0.14	0.3742	212	0
19.3	6	0.14	0.15	0.145	0.3808	212	0	6	0.15	0.15	0.15	0.3873	212	0
34.7	7	0.15	0.15	0.15	0.3873	212	0	7	0.15	0.15	0.15	0.3873	212	0
40.5	8	0.14	0.14	0.14	0.3742	212	0	8	0.14	0.15	0.145	0.3808	212	0
44.5	9	0.14	0.14	0.14	0.3742	212	0	9	0.14	0.14	0.14	0.3742	212	0
47.7	10	0.14	0.14	0.14	0.3742	212	0	10	0.13	0.14	0.135	0.3674	212	0
50.4	11	0.13	0.14	0.135	0.3674	212	0	11	0.13	0.14	0.135	0.3674	212	0
52.9	12	0.13	0.13	0.13	0.3606	212	0	12	0.13	0.13	0.13	0.3606	212	0
	13							13						
	14							14						
	15							15						
	16							16						
	17							17						
	18							18						
	19							19						
	20							20						
	21							21						
	22							22						
	23							23						
	24							24						
									Average Values:		0.1388	0.3724	212.0	0.0

ECSI, INC. - VELOCITY TRAVERSE DATA

Client: Sterigenics | Run #: 1 | Date: 11/16/2017 | Port Sketch:

Location: Ontario, CA | Probe Type: Std. | Baro Press: 28.90

Source: Oxidizer #2 Outlet | Stack I.D.: 36 in. | DSCFM: **20,000**



	Port 1							Port 2						
Inches From Port	Point#	Delta P Low	Delta P High	Delta P Average	Delta P Sq Root	Stack Temp (F)	Cyclonic Angle	Point#	Delta P Low	Delta P High	Delta P Average	Delta P Sq Root	Stack Temp (F)	Cyclonic Angle
0.7	1	0.68	0.68	0.68	0.8246	185	0	1	0.68	0.68	0.68	0.8246	185	0
2.4	2	0.68	0.68	0.68	0.8246	185	0	2	0.68	0.69	0.685	0.8276	185	0
4.2	3	0.68	0.69	0.685	0.8276	185	0	3	0.68	0.69	0.685	0.8276	185	0
6.3	4	0.69	0.69	0.69	0.8307	185	0	4	0.69	0.69	0.69	0.8307	185	0
9.0	5	0.69	0.69	0.69	0.8307	185	0	5	0.69	0.69	0.69	0.8307	185	0
12.9	6	0.7	0.7	0.7	0.8367	185	0	6	0.7	0.7	0.7	0.8367	185	0
23.1	7	0.7	0.7	0.7	0.8367	185	0	7	0.7	0.7	0.7	0.8367	185	0
25.0	8	0.69	0.7	0.695	0.8337	185	0	8	0.7	0.7	0.7	0.8367	185	0
29.7	9	0.69	0.69	0.69	0.8307	185	0	9	0.69	0.69	0.69	0.8307	185	0
31.8	10	0.68	0.69	0.685	0.8276	185	0	10	0.69	0.69	0.69	0.8307	185	0
33.6	11	0.68	0.69	0.685	0.8276	185	0	11	0.68	0.69	0.685	0.8276	185	0
35.3	12	0.68	0.68	0.68	0.8246	185	0	12	0.68	0.68	0.68	0.8246	185	0
	13							13						
	14							14						
	15							15						
	16							16						
	17							17						
	18							18						
	19							19						
	20							20						
	21							21						
	22							22						
	23							23						
	24							24						
									Average Values:		0.6890	0.8300	185.0	0.0

APPENDIX E

Gas Certifications

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases

600 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-001
Item No.: 0202000131OTCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CAL4448
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	1.10	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: MT DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)	Certified Concentration (Moles)	Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	1. PPM	1.10 PPM	10.0	5.00
NITROGEN	BAL	BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 1300 PSIG
Expiration Date: 18Apr2018

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases

00 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-003
Item No.: 02020001320TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CLM003232
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	10.1	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: MT MT DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)	Certified Concentration (Moles)	Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	10. PPM	10.1 PPM	1.0	5.00
NITROGEN	BAL	BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 1400 PSIG
Expiration Date: 18Apr2018

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
500 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-004
Item No.: 02020001330TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CLM011385
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	100.	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: B. McCully BLM DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	100.	PPM	100.	PPM	.0	5.00
NITROGEN		BAL		BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 1400 PSIG
Expiration Date: 18Apr2018

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases

500 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-005
Item No.: 020200013 40TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CLM002810
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	1,000.	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: B. McCall BLM DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	1,000.	PPM	1,000.	PPM	.0	5.00
NITROGEN		BAL		BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 1300 PSIG
Expiration Date: 18Apr2018

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases

00 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-006
Item No.: 02020001340TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CLM005787
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	10,080.	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: B. McCully BLM DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	10,000.	PPM	10,080.	PPM	.8	5.00
NITROGEN		BAL		BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 800 PSIG
Expiration Date: 18Apr2018

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFICATE OF ANALYSIS

Customer Name:	ECSi, Inc.	**Cylinder Number:**	SA25925
Stock or Analyzer Tag Number:	N/A	**Product Class:**	Certified Standard
Customer Reference:	Verbal- Dan	**Cylinder - Contents[1]:**	28 CF @ 2000 PSI
MESA Reference:	104448	**Cylinder-CGA:**	A006-HP-BR/350
Date of Certification:	4/20/2016	**Analysis Method:**	GC-TCD/FID
Recommended Shelf Life:	2 Years	**Preparation Method:**	Gravimetric

Component	Requested Concentration[2]	Reported Concentration[2,3]
Ethylene Oxide	50 ppm	48.8 ppm
Nitrogen	Balance	Balance

Authorized Signature:

1. The fill pressure shown on the COA is as originally quoted. The fill pressure measured by the customer may differ from the fill pressure originally quoted due to temperature effects, compressibility of the individual components when blended together in the cylinder, gauge accuracy or reduction in content volume before shipping as a result of samples withdrawn for laboratory QC necessary to ensure product quality.
2. Unless otherwise stated, concentrations are given in molar units.
3. Vapor pressure mixes are blended at a sufficiently low pressure so as to eliminate phase separation under most low temperature conditions encountered during transport or storage. However, it is generally recommended that cylinders containing vapor pressure restricted mixes be placed on the floor in a horizontal position and rolled back and forth to improve homogeneity of the gas phase mixture before being put into service.

Analytical Gas Standards are prepared and analyzed using combinations of NIST traceable weights, SRM's provided by NIST, or internal gas standards that have been verified for accuracy using procedures published by the US-EPA. Pure gases are analyzed and certified for purity using minor component Analytical Gas Standards prepared according to the methods specified above. Balances are calibrated to NIST test weights covered by NIST test number 822/256175/96. Reference Certification #'s: 163/W, 830/N and 3280. Calibration methods are in conformance with MIL-STD 45662A.

MESA Specialty Gases & Equipment
division of MESA International Technologies, Inc.
3619 Pendleton Avenue, Suite C ♦ Santa Ana, California 92704 ♦USA
TEL: 714-434-7102 ♦ FAX: 714-434-8006 ♦ E-mail: mail@mesagas.com
On-line Catalog at www.mesagas.com